EDITORIAL STAFF

E. L. SHANER
Editor-in-Chief

E. C. KREUTZBERG
Editor

A. J. HAIN
Managing Editor

E. F. ROSS
Engineering Editor

GUY HUBBARD
Machine Tool Editor

D. S. CADOT
Art Editor

ASSOCIATE EDITORS

G. H. MANLOVE — J. D. KNOX
W. G. GUDE — G. W. BIRDSALL
W. J. CAMPBELL

New York
I. H. SUCH — B. K. PRICE
L. E. BROWNE

Pittsburgh — R. L. HARTFORD
Chicago — J. F. POWELL
Detroit — A. H. ALLEN
Washington — L. M. LAMM

London
VINCENT DELPORT

BUSINESS STAFF

G. O. HAYS
Business Manager

C. H. BAILEY
Advertising Service

New York . . E. W. KREUTZBERG, B. C. SNELL
Pittsburgh . . . S. H. JASPER
Chicago . . . L. C. PELOTT, W. F. O'DELL
Cleveland . . . R. C. JAENKE, D. C. KIEFER

J. W. ZUBER
Circulation Manager

MAIN OFFICE

Penton Building, Cleveland

BRANCH OFFICES

New York . . . 110 East 42nd St.
Chicago . . Peoples Gas Building
Pittsburgh . 1800 Koppers Building
Detroit . . 1010 Stephenson Building
Washington . National Press Building
Cincinnati . . . 282 Sinton Hotel
San Francisco . . 1100 Norwood Ave.
Oakland, Calif., Tel. Glencourt 7559
London . . . . Caxton House, Westminster, S.W. 1
Berlin . Berlin, N.W. 40, Roonstrasse 10

• ● •

Published by THE PENTON PUBLISHING CO., Penton Building, Cleveland, Ohio. JOHN A. PENTON, Chairman of Board; E. L. SHANER, President and Treasurer; J. R. DAWLEY and G. O. HAYS, Vice Presidents; F. G. STEINEBACH, Secretary.

Member, Audit Bureau of Circulations; Associated Business Papers Inc., and National Publishers' Association.

Published every Monday. Subscription in the United States, Cuba, Mexico and Canada, one year $4, two years $6; European and foreign countries, one year $10. Single copies (current issues) 25c.

Entered as second class matter at the postoffice at Cleveland, under the Act of March 3, 1879. Copyright 1939 by the Penton Publishing Co.

STEEL

ESTABLISHED 1882

Contents

Volume 104—No. 11 **March 13, 1939**

READER COMMENTS 17

AS THE EDITOR VIEWS THE NEWS 21

NEWS
- How Steel and Motors Earnings Compare 23
- Steel Financial Reports for 1938 24
- Billion-Dollar Road Building Fund Urged for Safety and Prosperity 26
- Acetylene Group Is Well Received on Its First Visit to Southwest 26
- First Round in "Monopoly" Quiz a Blast at Basing Point System 27
- February Ingot Average Up 2.7 Per Cent 29
- Steelworks Operations for Week 29
- Men of Industry 30
- Obituaries 31
- Aviation 35
- Convention Calendar 40
- Activities of Steel Users and Makers 40
- Meetings 40

WINDOWS OF WASHINGTON 33

MIRRORS OF MOTORDOM 37

EDITORIAL—Broadcasting Facts on Mechanization 42

THE BUSINESS TREND
- Index Records Encouraging Gain; Outlook Improved 43
- Charts and Statistics 43-45

FORUM ON RE-EMPLOYMENT 46

TECHNICAL
- Roll-Grinding Coolants 48
- Tool Engineering Is Basis for American Manufacturing System 54

JOINING AND WELDING
- Frame Structures 50

MATERIALS HANDLING
- Handling Scrap 57

METAL FINISHING
- Base Metal Coloring—Part I 60

PROGRESS IN STEELMAKING
- Composite Rolls 63

STAMPING
- In-Line Press Shop 68

INDUSTRIAL EQUIPMENT 72

NEW METAL PRODUCTS 76

MARKET REPORTS AND PRICES 79
- The Market Week 80

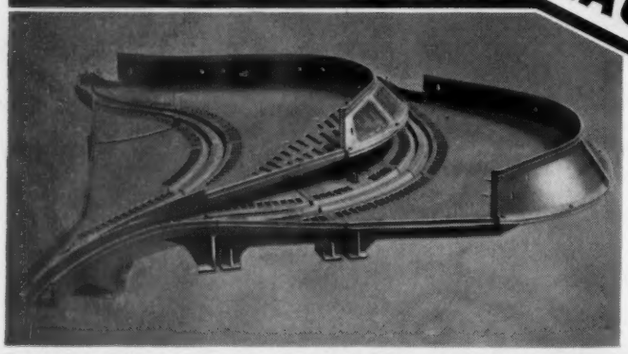
BEHIND THE SCENES 90

CONSTRUCTION AND ENTERPRISE 98

INDEX TO ADVERTISERS 104

PRODUCTION · PROCESSING · DISTRIBUTION · USE

CUT OUT THE LAGS IN YOUR LOOPING



Morgan Repeaters cut down exposure time between passes, preventing serious drops in temperature. They reduce handling risks, insure steady production at speeds far in excess of 1600 f.p.m. They are built in all types: from simple 180° repeaters to compound take-up and over-feed forms for use in four-strand rod mills. And they are repeating squares, ovals, and other sections.

Smooth mechanical handling of rod in looping is only one of Morgan's many contributions to continuous, profitable rolling. Let Morgan engineers give you a detailed report on your repeating and other rolling mill problems.

MORGAN CONSTRUCTION COMPANY
WORCESTER, MASSACHUSETTS

R-54

Let MORGAN WORCESTER ENGINEERS AND MANUFACTURERS *Remove the Lags*

As the Editor Views the News

■ WOULD a broad program of highway construction and maintenance, properly planned and adequately financed, lead to another era of prosperity in the United States? Spokesmen for American Road Builders association, which last week held its convention in San Francisco (p. 26) have no doubt about it. Life and time would be saved, they point out; millions in populated areas where roads and work are most needed would find employment; capital would flow again; enterprise be reborn; America rebuilt. Perhaps, there is more to this than the nation has realized; certainly the need for both roads and employment exists; it may be the right combination. . . . American Acetylene association meets for the first time in the Southwest (p. 26), aggressively carrying its message to the oil industry.

• • •

Management's annual reports to steel shareholders (p. 24) officially place 1938 among ranking depression years, exceeded in severity only by 1932, 1933, and 1934. They cite low operations, reduced prices, peak costs and additional expenses resulting from new and changing social and governmental conditions were barriers to a reasonable profit. . . . Forty-one steel and iron companies (p. 24) lost $2,444,000 last year; in contrast 19 motor vehicle manufacturers reported $106,838,000 net profit. . . .Another comparison (p. 23) shows how the leading steel interest and the leading automotive interest have fared profitwise in the past decade. . . . Discounted by these reports and comparisons is the federal trade commission's blast (p. 27) against the steel industry.

Steel vs. Motors

• • •

Steelmaking increased in most districts last week (p. 29) although the national average was up only ½-point to 56½ per cent. Further gains are predicted soon. Encouraging business news (p. 79) includes not only a diversified upturn in finished steel bookings, but also a definite improvement in sentiment among steel consumers. Mills have reaffirmed prices (p. 86) on the majority of products for second quarter delivery. Slight changes have been made in quantity deductions on hot-rolled and cold-finished carbon bars, hot-rolled strip and hot and cold-rolled sheets. . . . Representatives of the European scrap cartel (p. 28) are in the United States to buy 400,000 tons of scrap. . . . Light weight streamlined railroad passenger cars in operation or being built in this country (p. 41) now number 1139.

Market Brighter

• • •

Contributing this week to STEEL'S Forum on Reemployment (p. 46), Louis Poock, general manager, Cimatool Co., Dayton, O., disproves that machines eliminate men, demonstrates that modern equipment and tooling creates employment. . . . Incidentally, if American industry will "tool itself up," or "retool itself," in line with advanced practices (p. 54), improved quality and lower cost of manufactured products will result. . . . Composite cast-iron rolls, featuring high-strength cores and hard, tough, wear-resisting body shells cast together, can be produced to meet particular requirements of service (p. 63). . . . Coolants used in roll grinding (p. 48) have functions other than keeping temperature down, among these are carrying away metal removed, screening dust from the air, serving as detergents and preventing rust.

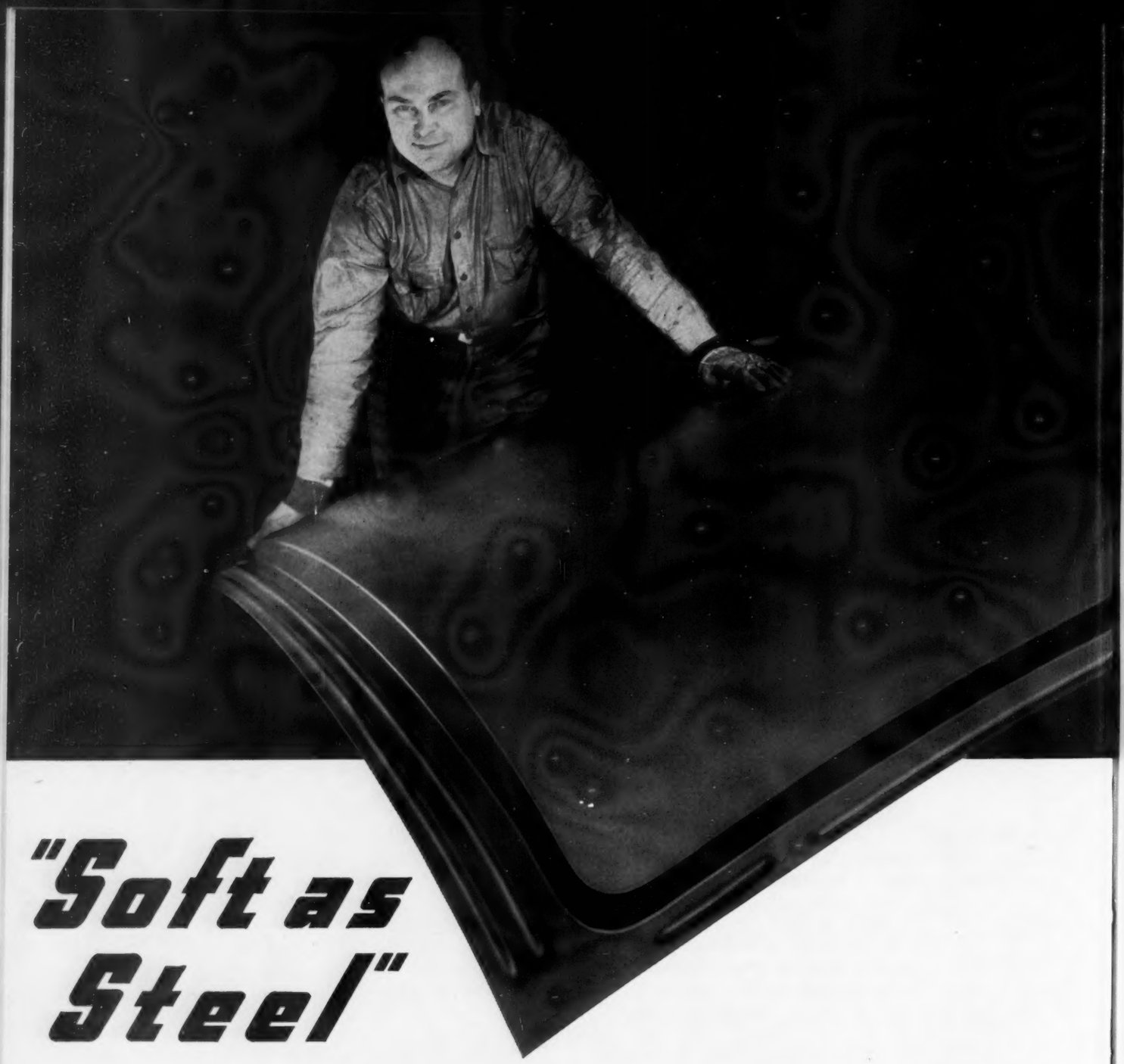
Machines Make Jobs

• • •

In a Canadian steel plant, cutting up of scrap to charging box size has been speeded up appreciably by delivering material to the shear on a specially-designed apron conveyor (p. 57). . . . A simplified system of dwelling construction (p. 50) utilizing arc welded steel frames and pretreated nonshrinking wood sections requires no temporary bracing during erection and reduces building time 20 per cent. . . . A manufacturer of gasoline pumps (p. 68) facilitates production of pressed steel parts by an in-line arrangement of presses to insure natural flow of work, and a system for die interchangeability. . . . Recently-developed electroplating processes and a number of chemical reactions (p. 60) offer wide possibilities in producing bright, durable color finishes on metals.

Cutting Up Steel Scrap

E C Kreutzberg



"Soft as Steel"

"Hard as steel" is a more common phrase. But he lacks imagination, if not also experience, who thinks only of steel's hardness. Today's streamlined designs and production economies, too, are made possible by steel's softness, its ease of forming.

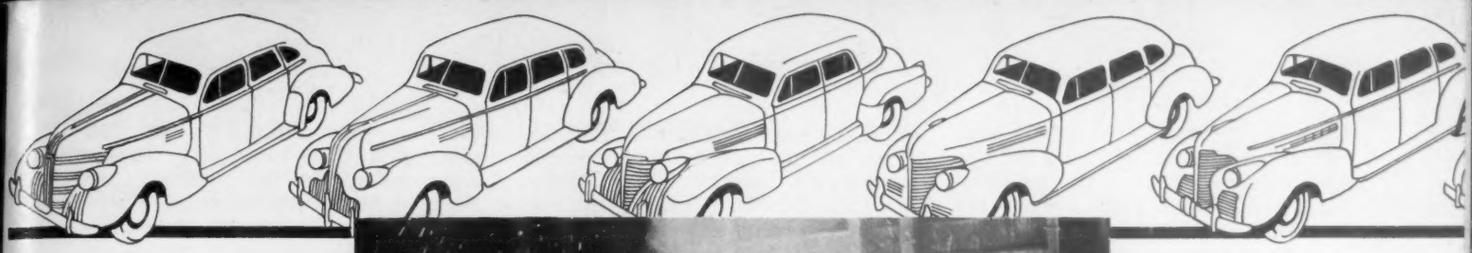
The hardness or softness of steel sheets is merely one of a number of qualities that can be adjusted to your particular needs when an Inland metallurgist understands your problems. By working *with you*, he makes steel work *for you* to better advantage.

There is more flexibility in steel today. Let an Inland metallurgist demonstrate the full meaning of this fact by developing a sheet especially suited to your purpose. This suggestion may help to cut your costs, to improve your product, or both—without any obligation or expense to you.

INLAND STEEL CO.

38 South Dearborn Street, CHICAGO • District Offices: DETROIT • KANSAS CITY • MILWAUKEE • ST. LOUIS • ST. PAUL

SHEETS STRIP TIN PLATE BARS PLATES FLOOR PLATES STRUCTURALS PILING RAILS TRACK ACCESSORIES REINFORCING BARS



How Steel and Motor Earnings Compare; Materials vs. Finished Product

■ STEEL producers in the past ten years often have had cause to glance enviously at the income statements of their leading customer, the automotive industry. The decade has brought scant profits to steel; automobile manufacturers have fared better.

An indication of the earnings advantage of the auto builders may be obtained by comparing the records of General Motors Corp. and United States Steel Corp.

General Motors usually produces more than 40 per cent of the total motor vehicle output in the United States and Canada. Its passenger cars represent every price class; it is a substantial producer of commercial vehicles.

United States Steel operates about 35 per cent of domestic ingot producing capacity, has plants in all major producing areas. Operations extend through every phase of steelmaking, from mining ore and coal to finished products.

Their income and balance sheet statistics offer some interesting comparisons.

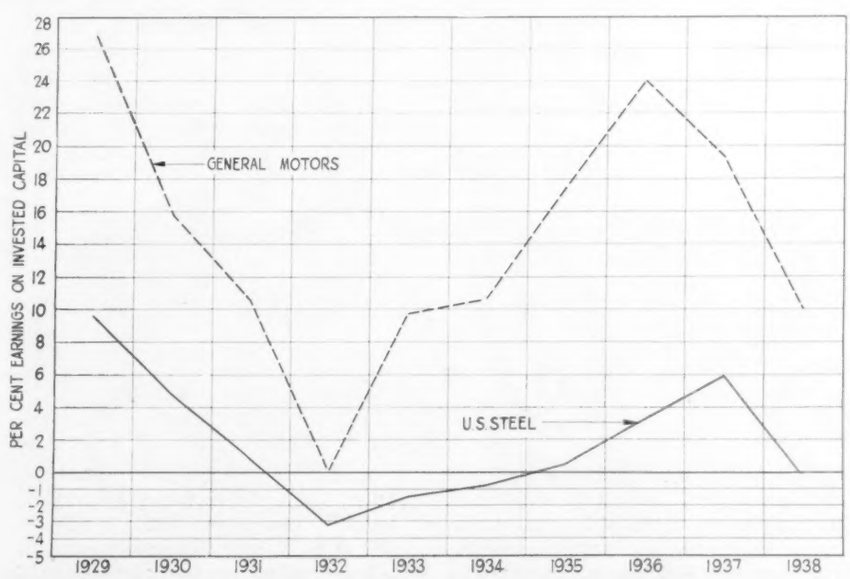
General Motors has reported a profit in each of the past ten years. U. S. Steel had losses in 1932, 1933, 1934 and 1938.

How General Motors' earnings on invested capital have compared with those of U. S. Steel in the past ten years is indicated in the accompanying chart.

Dividends to common stockholders further reflect the advantage. Per common share earnings and dividends for both companies, according to Standard Statistics:

	U. S. Steel		General Motors	
	Earns.	Div.	Earns.	Div.
1929....	$21.19	$8.00	$5.44	$4.30
1930....	9.12	7.00	3.31	3.30
1931....	* 1.40	5.50	2.01	3.00
1932....	*11.08	0.50	*0.21	1.25
1933....	* 7.09	.....	1.72	1.25
1934....	* 5.39	.....	1.99	1.50
1935....	* 2.77	.....	3.69	2.25
1936....	2.91	.....	5.35	4.50
1937....	8.01	1.00	4.38	3.75
1938....	* 3.79	.....	†2.17	1.50

*Deficit. †Preliminary.



■ **Earnings on invested capital—Big Steel and Big Motors—since 1929**

Market quotations for common

shares of the two corporations lend added significance to the earnings and dividend figures. General Motors common in 1929 ranged between 91¾ and 33½, dipped to 7⅝ in 1932, recovered to 77 in 1936.

U. S. Steel common's range was from 261¾ to 150 in 1929, reached a 21¼ low in 1932, recovered to 126½ in 1937.

Book value of U. S. Steel common was $204.16 at the close of 1929 and $151.09 at the close of 1937. General Motors common book value was $17.58 in 1929 and $17.90 in 1938.

Big Steel's total invested capital is considerably in excess of that of General Motors; net income has been less in each of the past ten years. Comparisons:

(In Millions of Dollars)

	U. S. Steel		General Motors	
	Total Invest. Cap.	Net Income	Total Invest. Cap.	Net Income
1929....	2,135	197.6	955	246.0
1930....	2,257	104.4	977	153.8
1931....	2,195	13.0	926	96.9
1932....	2,091	*71.2	863	0.2
1933....	2,031	*36.5	874	83.2
1934....	2,012	*21.7	895	94.7
1935....	1,738	1.1	956	167.2
1936....	1,746	50.6	993	238.5
1937....	1,788	94.9	1,020	196.4
1938....	.....	* 7.8	1,019	†102.3

*Deficit. †Preliminary.

These comparisons, of course, cannot be construed as being typical of the automotive industry as a whole, or of the steel industry as a whole. Many automakers' earnings records are far less favorable than General Motors'. Likewise some steel companies show a better earnings record than U. S. Steel; some are less favorable.

The figures do indicate in a general way the burden depressions place on the producer-goods industries, as compared with the consumer-goods industries.

Huge overhead charges in the steel industry necessitate a high rate of operations. Cyclical fluctuations in demand are accompanied by sharp fluctuations in earnings.

Automotive earnings also follow the cyclical pattern generally. The dips, however, appear to have been less severe than in steel, due in large measure to lower investment and the greater ease with which costs can be controlled.

Another fundamental contrast is the difference in pricing. The automakers sell their product, with a considerable range in prices, to "the man in the street" who can put little pressure on retail prices. On the other hand the steelmaker sells to organized businesses which are known to be capable of tremendous pressure on prices.

HOW STEEL COMPARED WITH SOME OTHER INDUSTRIES

Iron and steel producers were more severely affected by the 1938 depression than most other industries, a study by the National City Bank of New York indicates.

Forty-one iron and steel companies which had net income of $208,668,000 in 1937 suffered a $2,444,000 deficit in 1938, according to the bank's compilation. In contrast, 940 companies in various industries had $1,545,004,000 net profit in 1937, and $672,146,000 net profit in 1938, a decrease of 56.5.

Iron and steel also suffered more than other metal products. Net profit of 319 such companies, including iron and steel, declined 77.2 per cent, from $531,023,000 to $121,175,000.

Nineteen automobile manufacturers made $256,257,000 in 1937 and $106,838,000 in 1938, a decrease of 58.3 per cent. Comparisons:

No.	Industry	Net Profits (In Thousands of Dollars) 1937	1938	Per Cent Decrease
41	Iron, steel	$208,668	*$2,444	....
11	Ag. implements	64,213	35,485	44.7
26	Bldg. equip.	12,096	672	94.4
36	Elect. equip	64,998	23,632	63.6
33	Hdw., tools	21,018	7,889	62.5
22	Household equip.	10,123	3,216	68.2
71	Machinery	42,422	13,701	67.7
11	Office equip.	25,825	16,094	37.7
21	R. R. equip.	41,713	*3,593	....
15	Aircraft, parts	1,986	4,215	gain
32	Misc. metal prod.	37,961	22,308	41.2
319	Total	531,023	121,175	77.2
19	Motor vehicles	256,257	106,838	58.3
31	M. V. parts	29,697	3,331	88.8

* Deficit.

"Loss Less Than Might Reasonably Have Been Expected"

■ NOTING a $7,717,454 net loss for 1938, United States Steel Corp. in its annual report to stockholders ranks last year as one of the major depression years in the steel industry in the last two decades.

The corporation's deficit is attributed to an approximate 50 per cent decline in operations coupled with a dislocated price condition in many finished products. Selling prices were materially reduced without corresponding reduction in the high cost levels that prevailed for materials, labor, services, and taxes which comprise the elements of production expense.

The report adds: "In many respects the year in the steel industry was one involving difficult and uncertain business problems. Decisions of importance were necessary concerning questions of policy and management in keeping with industry's relations to public and social responsibility.

"The influence of these growing public responsibilities extends more and more into nearly every phase of business activity, and the resulting additional expense thereby incurred has constituted an unavoidable cost burden which industry has had to absorb.

"If allowances are made for the expense caused by these changing conditions, and for the severity of the depression impacts which the steel industry suffered during the greater part of 1938, the net loss for the year of $7,717,454 is less than might reasonably have been expected."

In 1937, the corporation reported $94,944,358 net profit.

Results for 1938 compared with those for 1937:

	1938	1937
Net income (or loss) after all charges	*$7,717,454	$94,944,358
Dividends:		
Preferred:		
Current year ($7 a share)	$25,219,677	$25,219,677
Arrearages ($9.25 a share)	.....	$33,326,002
Common:		
$1 a share in 1937	None	$ 8,703,252
Surplus (or deficit) for year after dividends	*$32,937,131	$27,695,427

*Deficit.

Production in 1938 of rolled and finished steel products for sale amounted to 6,562,948 tons, a decline from the year before of 6,199,319 tons, or 48.6 per cent. Only in the three more recent depression years, 1932, 1933 and 1934, was the production of the company's subsidiaries lower than last year, and except in those years the 1938 volume was lower than in any year since 1908.

"Full significance of this sharply reduced level of industrial activity becomes more apparent by a comparison with the corporation's average annual production in the 5-year period from 1926 to 1930, inclusive, which shows that the 1938 production dropped approximately 7,000,000 tons. . . . This represents a tonnage shrinkage for 1938 of nearly 52 per cent."

Percentage of capacity operated in production of rolled and finished steel products for sale:

	1938	1937
First quarter	32.3	82.6
Second quarter	31.4	88.8
Third quarter	34.2	73.6
Fourth quarter	46.9	40.6
Average for year	36.2	71.2

Dollar volume of business transacted in 1938 amounted to $766,673,753, compared with $1,395,549,630 in 1937, a decline of 45 per cent.

Inventories at the close of 1938 were approximately 7 per cent be-

low those at the close of 1937. These amounted to $307,479,018 at the end of last year, compared with $331,479,126 on Dec. 31, 1937.

The report notes all classes of taxes have continued at a high level. "While the total amount of the 1938 tax bill of the corporation and its subsidiary companies falls considerably under that for 1937, it is due mainly to the 1938 reduced volume of business transacted and the heavy loss in earnings upon which income and profits taxes are levied.

"Notwithstanding these lower aggregate tax charges in 1938, they constitute a somewhat greater burden per unit of output and gross income than was the case in 1937."

Total taxes in 1938 were $48,842,131, compared with $88,048,237 in 1937. State and local taxes were reduced from $42,882,565 to $32,044,825; federal taxes from $31,749,768 to $5,488,091; social security taxes from $13,415,904 to $11,309,215.

Employment in 1938 averaged 202,108, against 261,293 in 1937. Payrolls totaled $282,209,332 in 1938, and $442,718,351 in 1937. Average work week dropped to 29.71 hours, compared with 37.63 hours in 1937. Average hourly earning increased 3.8 cents to 90.2 cents.

NATIONAL'S POSITION "MOST SATISFACTORY" IN HISTORY

E. T. Weir, chairman, National Steel Corp., prefacing the company's tenth annual report, states this year's balance sheet "sets forth the most satisfactory position attained since the formation of the company."

National Steel, which was organized in October, 1929, on the eve of the great depression, has been the only major steel producer in the country to report net earnings in each of the succeeding years.

Working capital at Dec. 31 amounted to $37,537,443.55, an increase of $3,375,138.58 from the comparable figure at the end of 1937. Mr. Weir pointed out this improvement is after additions to plant and equipment amounting to $7,930,971.23, financed from working capital. During the past four years, total additions to property and equipment have amounted to approximately $65,000,000.

Earns $3.03 Per Share

Net earnings for 1938 after all charges, including interest, depreciation and federal taxes, were $6,661,651.97, equal to $3.03 per share on 2,198,767 shares of capital stock. Dividends totaling $2,168,532 were paid at the rate of 25 cents quarterly.

Funded debt was decreased by sinking fund payments of $1,200,000, which makes a total reduction of $3,400,000 on the $60,000,000 of bonds originally issued. Of the obligations incurred in the construction program completed during 1938, $5,000,000 was funded at 2 per cent for a period of five years.

Because of the unsatisfactory volume of business in 1938 as compared with 1937, payrolls declined to $27,608,885.10 from $39,254,006.95. The lower volume of business also caused a decrease in the average number of employes from 19,983 in 1937 to 17,623 in 1938. Average annual wage payment to each employe was $1,566.64.

Taxes for the year totaled $5,162,695.13, equal to $2.35 a share, and representing a payment equal to $292.95 for each employe.

REPUBLIC EMPLOYES AVERAGE 93 CENTS AN HOUR

Republic Steel Corp. employes' earnings last year averaged 93 cents an hour, highest in history despite depressed business conditions which caused a $7,997,825 net loss to the company (STEEL, Feb. 20, p. 18).

Earnings averaged 90.8 cents an hour in 1937, 74.6 cents in 1936, and 72.9 cents in 1935, according to the company's annual report.

Employes in 1938 totaled 42,073. They worked 28.7 hours a week on an average, were paid $58,505,443. In 1937, 52,438 employes averaged 36.8 hours a week, were paid $91,353,825.

More than 66 per cent of employes were eligible for vacations or vacation pay.

During 1938, 1278 problems were submitted to the management for negotiation. Some 646 meetings attended by 3947 employes were held to discuss and dispose of the problems. Their disposition: 68 per cent settled in favor of employes; 22 per cent settled in the negative; 2 per cent withdrawn by employes; 4 per cent compromised; and 4 per cent pending.

Company's gross income was $142,571,215. Expenses totaled $150,569,040. Of this, 50.66 per cent was expended for materials and other expenses, 40.38 per cent for wages and salaries, 3.89 per cent for direct taxes, 3.04 per cent for interest, 7.64 per cent for depreciation and depletion.

As of Dec. 31, working capital was $78,128,939; investment in properties and plants was $238,873,527; invested capital was $320,499,611. Shipments last year included 1,888,519 net tons finished and semifinished products, 254,378 gross tons pig iron.

JONES & LAUGHLIN

Jones & Laughlin Steel Corp., in its pamphlet report, shows a net loss of $5,879,958 for 1938, compared with a net profit of $5,266,157 in 1937. Its ingot operations averaged 37 per cent for the year; 67.5 per cent in 1937. Steel products sold and shipped totaled 1,047,088 tons, and gross sales $75,410,901 in 1938.

Payrolls amounted to $34,162,748, against $59,423,421 in 1937. Number of employes averaged 26,286, about 10,000 less than in 1937. At

(*Please turn to Page* 97)

New Models at Berlin's Automobile Show

■ **At the recent German national automobile show tanks were put on display to acquaint the public with the formidable defense weapons under control of Herr Hitler. They attracted as much attention as the new cars. NEA photo**

Billion-Dollar Road Building Fund Urged for Safety and Prosperity

SAN FRANCISCO

■ "HIGHWAYS of Tomorrow"—what they will be like and how they will be built—were spotlighted at the thirty-sixth annual convention and exhibit of the American Road Builders' association in the Civic auditorium here, March 7-10.

Machinery and materials to construct and maintain roads were viewed by 15,000 delegates from the United States and 24 foreign nations.

Lack of express highway facilities within and through our major cities is penalizing motorists. Elevated highways would relieve congestion and save public millions of dollars by reducing accidents, fuel consumption and travel time. Such, in substance, were the conclusions reached by a special committee headed by V. G. Iden, secretary, American Institute of Steel Construction Inc., appointed to study the construction of elevated highways.

The committee enumerated various elevated highways already built and analyzed the results achieved from them; it also described plans for additional elevated highways already drawn by various cities. These plans, it was stated, call for the erection of at least 1000 miles of elevated roadways for the relief of traffic congestion.

Would Reduce Traffic Fatalities

Charles M. Upham, engineer-director of the ARBA, said:

"Of 40,000 deaths in motor accidents—as in 1937—75 per cent could be avoided by eliminating crossings at grade, and adding median lines. Germany has reduced its fatalities 83 per cent by such means.

"This association is convinced recovery could be brought about by a comprehensive plan to build national highways. Most of the 11,000,000 unemployed live where traffic is the heaviest. These men could be put to work in their own areas. Service stations would appear along finished highways, houses and farms would spring up, and individual capital would be gradually drawn in by this process."

He stressed after-completion benefits of highways, compared with relief projects which in many instances bring relief only during the construction period.

To finance superhighway construction during the next 25 years, the present congress should provide for a billion-dollar revolving fund, said Murray D. Van Wagoner, Michigan state highway commissioner, re-elected president of the association.

He suggested two alternative methods by which the program could be financed. A toll charge sufficient to pay for the construction, maintenance and administration; or a 1-cent increase in the federal gasoline tax to be used exclusively for superhighways. He admitted disadvantages and objections to both plans, indicated the federal gasoline tax increase would be the easiest to administer.

The present 1-cent federal tax yields about $195,000,000 annually, which the speaker believed adequate for the proposed program and which might even reduce the 25-year period suggested. He pointed out upward of $170,000,000 a year of motorists' taxes have been diverted to finance other functions of government.

William H. Parrish, industrial sales executive, International Harvester Co., Chicago, was re-elected president of the manufacturers' division.

Acetylene Group Is Well Received On Its First Visit to Southwest

HOUSTON, TEX.

■ GOOD attendance featured the thirty-ninth annual convention of the International Acetylene association at Rice hotel here, March 8-10, the first meeting which the organization has held in the Southwest. Houston being the nation's oil capital, interest centered in applications of the oxyacetylene process in the oil industry.

Registration at the beginning of the sessions approached the 600 mark. About 1100 took part in the simultaneous roundtable discussions at the San Jacinto high school on the evening of March 8.

H. P. Dolisie

H. P. Dolisie, managing director, Canadian Liquid Air Co. Ltd., Montreal, vice president of the association the past year, was elected president to succeed Elmer H. Smith, president, Commercial Gas Co., Minneapolis.

Mr. Dolisie was born in France, and decorated with the French war cross for bravery in the World war. He was well known in the French steel industry when in 1929 he joined the Societe L'Air Liquide of Paris, manufacturers of welding equipment and supplies. A year later, he went to Canada as assistant manager of the company with which he is now associated. In 1934 he was advanced to his present position.

Henry Booth, sales manager, Shawinigan Products Corp., New York, was elected vice president to succeed Mr. Dolisie. He also will continue to serve as treasurer. H. F. Reinhard, Union Carbide Co., New York, was re-elected secretary.

New directors named were: E. L. Mills, Bastian-Blessing Co., Chicago; C. D'W. Gibson, Air Reduction Sales Co., New York; and Elmer H. Smith, retiring president.

The following companies were elected to membership: People's Gas Supply Co. Ltd., Ottawa, Ont.; Handy & Harman Inc., New York; Moto Meter Gage & Equipment division, Electric Auto-Lite Co., Toledo, O.; New England Gas Products Inc., Charlestown, Mass.; Independent Engineering Co., O'Fallon, Del.; and John R. R. Miles, Prescott, Wis.

A feature of the convention was the award of the association's James Turner Morehead medal to John J. Crowe, manager of the apparatus research and development department, Air Reduction Sales Co., Jersey City, N. J., "for his unceasing and successful technical activities" in the utilization of acetylene. (STEEL, Feb. 27, p. 74.)

The association approved a revised hose connection standard as an I. A. A. standard, but not as a commercial standard.

First Round in "Monopoly" Quiz a Blast at Basing Point System

WASHINGTON

■ STEEL'S "baptism of fire" last week before the temporary national economic committee comprised:

A long statement by the federal trade commission, in which it criticized the basing point system;

Testimony by Eugene W. Burr, an attorney for the commission, who paraphrased most of the commission's statement, adding a few opinions of his own;

Testimony by Prof. Frank A. Fetter, Princeton university, who gave a history of the basing point system, in the course of which he made a statement to the effect that "the steel fabricators have been treated as fairly as they could by anyone" — which, considering the fact the commission was presenting its case, was considered significant.

It was made plain that "further testimony" will be given to the TNEC by the department of justice and trade commission. Burr said neither the commission's statement nor his testimony was based on information obtained by means of questionnaires sent recently to steel companies.

However, at this time no further hearings are in sight, and none is likely to be called until the returns on the questionnaires have been tabulated, some months hence.

The steel industry — according to the commission—"is a focal center of monopolistic infection, which if not eradicated may well cause the death of free capitalistic industry in the United States."

Industry To Be Heard Later

At that "blast" Senator O'Mahoney, chairman of the committee, said he wanted it understood it was not to be taken as the opinion of the committee, and that the steel industry would be given an opportunity to be heard later.

The commission's statement dealt with such features as "visible effects of identical delivered prices in the steel industry; implications of identical delivered prices; indicators of monopoly; effects of identical delivered prices; effects of partial competition; monopoly leads to government control; competition; and the approach to the problem.

"When the basing point system is operating smoothly," it said, "it appears that quotations on steel of a given quality and quantity are identical at any given point of delivery. The formula, covering base price and rail freight from the governing basing point, is known to all members of the industry. Mills located at points other than the basing point use the standard formula as if they were located there.

"To the customer, at his location, there is no difference between the quality and delivered price offered by all bidders. Occasional variations from this perfect identity are observed, but only during short periods when there is a temporary flurry of price cutting. Such flurries have been an incident of practically all price-fixing systems. They occurred even in the days of signed price agreements in the steel industry."

Price Violations Minimized

The statement continued: "The available evidence indicates that secret violation of the identical delivered price system is seldom of such importance as to prevent the general economic effects of controlled prices.

"Since the delivered price quoted is the same among bidders with many different freight costs, the net amount received, or mill realization, varies among the bidders, depending on their distance from the point of delivery.

"A plant not located at a basing point will charge even to customers located at its own door the base price, plus freight from the governing basing point. But in selling to a customer located at the basing point it will quote only the base price, and will deduct the actual freight from its plant to the customer at that basing point, leaving as a net return the base price minus freight.

"A plant located at a basing point will sell its product at all points within the area where the delivered price is governed by that basing point, at the same base price, plus the actual rail freight to point of delivery. When bidding outside this area, however, it must 'absorb' a part of the freight, which means accepting a lower net price in order to match the delivered price which is computed by the standard formula from some other base. That is, outside the area governed by its own basing point, the basing point mill will accept varying net prices in the same way as a mill not located at a basing point."

The commission said studies of actual sales of steel show that mills deliver steel in the neighborhood of other mills that are producing steel of the same kind, and these in turn ship their product to the neighborhood of their rivals, or even beyond. Physically this cross-hauling is a pure waste; it could be justified only if some other form of economy were to be obtained by means of an interchange of identical products in the industry.

It stated the pricing system in steel is often called an "umbrella," the implication being that it holds up a price level under which mills of all degrees of efficiency or obsolescence find shelter. There appears to be a tendency for obsolete mills to survive after new and more efficient plants have entered the field, resulting in excess capacity and a low average percentage of operation. The value of an old plant would be more easily defended if it actually served a neighboring market at a net saving to the customers. Dealing with effects of identical delivered prices, the commission said:

"To summarize the effects which we have reason to believe follow from the system of identical delivered prices: The wastes of cross-hauling and of excess capacity and high capital overhead are saddled on the consumer as if they were legitimate costs. Under the guise of freight costs, buyers located at a distance from a basing point even though they purchase from a mill in their own city are charged what amounts to a penalty.

Charges Competition Eliminated

"Thus the advantage or disadvantage of location for many buyers is an artificial one, which may be altered by arbitrary private decree through a change in the basing point. Price competition in the steel industry, during all periods when the system is working, is eliminated. High prices, not in conformity with the law of supply and demand, place unreasonable limitations on use of the material. The effect, when combined with that of similar artificial prices in many other lines of production, is a depressed condition which can be kept from utter collapse only by repeated doses of public subsidy."

On effects of partial competition:

"The fixed-price system in steel sometimes slips momentarily, as it did in June, 1938. When the momentary 'competition' is cured and peace once more hovers over the industry, competitive practices still crawl here and there under the surface. But such vestigial remnants of competition are not

enough to restore a healthy condition.'

"The industry is adjusted to a condition of monopoly. Its plants are located at points dictated by monopoly practices—many of them are relics of the 'Pittsburgh Plus' —under which one principal basing point dominated the price structure.

"A temporary restoration of competition is peculiarly painful to the industry because it cannot quickly adapt itself to an unprotected existence. Some of the independents, and some units of the larger companies, born and brought up under the 'umbrella,' fear to attempt a life of free competition. The desire to restore and maintain a monopolistic scale of prices is therefore a powerful influence in the industry. Moreover, such competition as does occur from time to time takes the form of sporadic discriminatory price cutting, in which the more powerful companies may use their power to discipline the weaker independents."

Burr was the first witness and he went into great detail regarding the history of the basing point system in steel.

He referred to reports on the industry made by the trade commission to congress and to the President, to the NRA code, and the Pittsburgh-plus case in the investigation of 1924. He also read into the record testimony taken by a subcommittee of the senate interstate commerce committee two years ago when Senator Wheeler's basing point bill was discussed.

He then referred to changes made by the industry in the basing point system in June last year, but said, "they do not go to the vitals of the situation." He spoke of freight rate changes which are sent out to the industry "by the traffic committee of the institute" and contended there always is a lag between the freight rate change and the effect on steel prices.

"Destroying Purchasing Power"

Burr went into detail concerning the Supreme Court's decision "in the dissolution case of the Steel corporation" and told the committee that at the time the court did not have the basing point question before it. He spoke of other mergers which the commission tried unsuccessfully to stop.

He told the committee that while customers are not satisfied with the basing point system, "they are not objecting as much as you would think." He said buyers pass on additional cost to the consumers. Some of the steel buyers themselves, he said, have basing points of their own.

He declared the industry is "shortsighted" in carrying out the system "which is destroying the purchasing power of the people." He contended this was "one of the things which helped bring on the depression."

He "thinks" the cross hauling of steel has been reduced since the changes were made last June. But, "there has been a great deal of identical bidding."

Prof. Fetter spent considerable time explaining various phases of the basing point system.

The professor told the committee the basing point system has been "a burning issue" for years not only in steel but in other industries. He has been studying the system "for a third of a century." Basing points have been used in several industries for 20 to 40 years.

"Steel executives look back with terror on the days of cut-throat practices before the basing point came into use."

Basing point, he said, began in the steel industry at the time of Andrew Carnegie. Possibly it was copied from the old cartel system which arose in Germany in 1870.

European Scrap Cartel To Buy 400,000 Tons

■ About 400,000 tons of steelmaking scrap will be purchased within a fortnight by three members of the scrap council, British Iron and Steel federation, representing the European scrap cartel. The delegation seeks a larger percentage of No. 1 steel in its next purchase. This has averaged about 25 per cent in the past. Dealers will seek to hold to the former proportion.

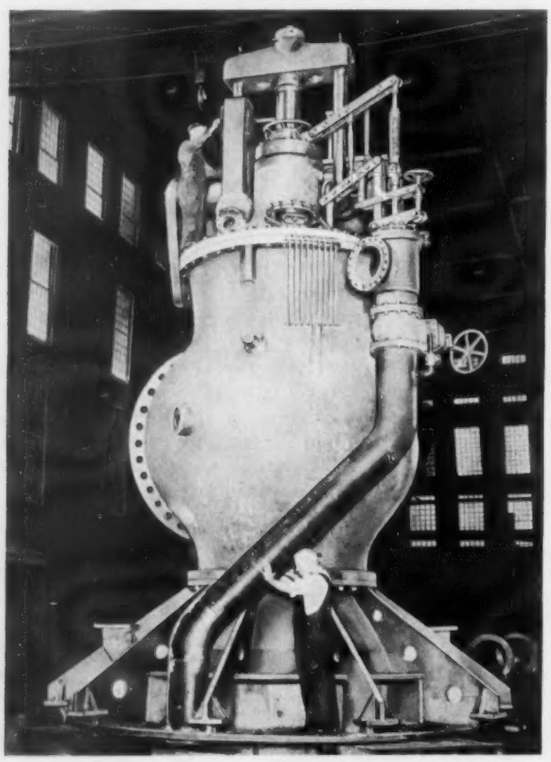
It is expected an effort will be made to obtain a lower price than $15, f.a.s., paid for the last purchase. Brokers believe present strength will force $16 for the next tonnage.

The delegation has started on a tour of scrap yards in various cities to obtain first hand information on yard stocks and handling details, returning to New York in about two weeks when the purchase will be closed.

Proposed Scrap Loading Rules Are Suspended

■ Interstate commerce commission has suspended until Oct. 1 effective date of a proposal by western trunk lines to impose drastic regulations on loading iron and steel scrap, following protest by the traffic committee, St. Louis chapter, Institute of Scrap Iron and Steel Inc.

The proposal was that expensive reinforcement be mounted on open-top equipment, under penalty of increased rating from 12½ to 22½ per cent of first class on 75,000-pound basis, and 15 to 22½ per cent on 50,000-pound basis. The institute asked suspension, followed by investigation and will co-operate with the railroads in the latter.



Huge Pressure Regulator for Boulder Turbine

■ Many important accessories must be supplied with two additional 115,000 - horsepower turbines Allis-Chalmers is shipping to Boulder dam. This 320,000-pound "accessory" is a pressure regulator. Each turbine daily will consume as much water as used by a city of 10,000,000 persons. If the load goes off the turbine, this volume of water would be shut off within four seconds, setting up terrific pressure on the pipe lines. Instead of stopping the flow so suddenly, the regulator temporarily bypasses the water; then gradually closes again

February Ingot Average Up 2.7%

■ STEEL ingots were produced in February at an average weekly rate of 738,721 gross tons, 2.68 per cent above the 719,376 tons in January, according to the American Iron and Steel institute. The average in February, 1938, was 425,931 tons.

Because of the shorter month, the February total, 2,954,883 tons, was slightly less than January's 3,186,834 tons, though far greater than 1,703,726 tons in February last year.

Percentage of capacity engaged last month was 54.1, compared with 52.69 in January and 31.74 in February, 1938. The February rate was highest since October, 1937, with the single exception of November, 1938, when it reached 62.05 per cent.

Cumulative output for two months this year, 6,141,717 tons, is nearly double 3,436,490 tons produced in the corresponding portion of 1938.

Ship Work at High Point

■ Ships under construction to American bureau of shipping classification March 1 numbered 180, total 697,110 gross tons, highest in several years, compared with 177 vessels, 677,980 tons, Feb. 1; and 83 of 383,115 gross tons, March 1, 1938. In the March 1 total 74 were ocean-going craft, 644,850 tons; 105 miscellaneous steel vessels, 52,080 tons, and one wooden boat, 180 tons.

District Steel Rates

Percentage of Ingot Capacity Engaged In Leading Districts

	Week ended Mar. 11	Change	Same week 1938	Same week 1937
Pittsburgh	48	− 2	26	89
Chicago	58	+ 1.5	27.5	82.5
Eastern Pa.	40	+ 3	29	57.5
Youngstown	52	+ 5	29	85
Wheeling	74	+ 3	38	96
Cleveland	52	+ 1	28	78
Buffalo	32.5	None	18.5	90
Birmingham	83	None	61	77
New England	65	+ 5	15	97
Cincinnati	43	−12	32	68
St. Louis	57.5	+ 2.5	37	82
Detroit	76	None	33	95
Average	56.5	+ 0.5	30	87

U. S. STEEL CORP. SHIPMENTS
(Inter-company shipments not included)
(Tons)

	1939	1938	1937	1936
Jan.	789,305	518,322	1,149,918	721,414
Feb.	677,994	474,723	1,133,724	676,315
March	.....	572,199	1,414,399	783,552
April	.....	501,972	1,343,644	979,907
May	.....	465,081	1,304,039	984,097
June	.....	478,057	1,268,550	886,065
July	.....	441,570	1,186,752	950,851
Aug.	.....	558,634	1,107,858	923,703
Sept.	.....	577,666	1,047,962	961,803
Oct.	.....	663,287	792,310	1,007,417
Nov.	.....	679,653	587,241	882,643
Dec.	.....	694,204	489,070	1,067,365
Adj.*	.....	.....	†77,113	†40,859
Total	.....	6,625,368	12,748,354	10,784,273

*Yearly adjustment. †Deduction.

■ York Ice Machinery Corp., York, Pa., will begin production of a new low-priced air conditioner March 13, with weekly output of 1500 units. This marks a new high production by the air conditioning industry.

Steel Ingot Statistics

Monthly Production—Complete for Bessemer; Open Hearth, Calculated from Reports of Companies Making 98.26 per cent in 1937

	—Open Hearth—		—Bessemer—		—— Total ——		Weekly production, all companies,	Number of weeks in
1939	Gross tons	Per cent of capacity	Gross tons	Per cent of capacity	Gross tons	Per cent of capacity	gross tons	month
Jan.	3,039,340	55.19	147,494	27.24	3,186,834	52.69	719,376	4.43
Feb.	2,758,697	55.48	196,186	40.12	2,954,883	54.10	738,721	4.00
2 mos.	5,798,037	.....	343,680	.....	6,141,717	.....	728,554	8.43
1938								
Jan.	1,632,773	30.25	99,991	18.27	1,732,764	29.15	391,143	4.43
Feb.	1,578,233	32.38	125,493	25.40	1,703,726	31.74	425,931	4.00
2 mos.	3,211,006	.....	225,484	.....	3,436,490	.....	407,650	8.43
March	1,854,669	34.36	157,737	28.83	2,012,406	33.85	454,268	4.43
April	1,793,522	34.31	131,644	24.84	1,925,166	33.44	448,757	4.29
May	1,676,215	31.06	130,590	23.87	1,806,805	30.39	407,857	4.43
June	1,519,589	29.07	118,688	22.40	1,638,277	28.46	381,883	4.29
July	1,854,076	34.43	127,982	23.44	1,982,058	33.42	448,429	4.42
Aug.	2,350,199	43.54	196,789	35.97	2,546,988	42.85	574,941	4.43
Sept.	2,449,861	46.98	207,887	39.32	2,657,748	46.28	620,969	4.28
Oct.	2,894,726	53.63	223,208	40.79	3,117,934	52.45	703,823	4.43
Nov.	3,370,974	64.50	201,246	37.98	3,572,220	62.05	832,685	4.29
Dec.	2,984,204	55.42	158,965	29.12	3,143,169	53.00	711,124	4.42
Total	25,959,041	40.86	1,880,220	29.20	27,839,261	39.79	533,933	52.14

Percentages of capacity operated for 1939 are calculated on weekly capacities of 1,243,153 gross tons open-hearth ingots and 122,248 gross tons bessemer ingots; total, 1,365,401 gross tons; based on annual capacities as of Dec. 31, 1938, as follows: Open-hearth ingots, 64,817,994 gross tons; bessemer ingots, 6,374,000 gross tons.

Percentages of capacity operated for 1938 are calculated on weekly capacities of 1,218,342 gross tons of open-hearth ingots and 123,514 gross tons of bessemer ingots, total 1,341,856 gross tons; based on annual capacities as of Dec. 31, 1937, as follows: Open-hearth ingots, 63,524,356 gross tons; bessemer ingots, 6,440,000 gross tons.

PRODUCTION

■ STEELWORKS operations last week advanced half a point to 56.5 per cent, highest since the middle of December. In the corresponding week last year the rate was 30 per cent and two years ago 87 per cent. Increases were made in seven districts, declines in two.

Youngstown, O.—Rose 5 points to 52 per cent when Republic Steel Corp. added three open hearths and practically doubled bessemer output here. Schedule for this week indicates 2 points further rise as Youngstown Sheet & Tube Co. resumes production at its Brier Hill plant, idle since January.

Chicago — Advanced for sixth consecutive week, to 58 per cent, 1.5 points over preceding period. Total rise has been 12.5 points.

St. Louis — Net gain of one open hearth caused a rise of 2.5 points to 57.5 per cent. One producer expects to add two furnaces this week.

Detroit — Unchanged at 76 per cent, with 18 of 25 open hearths active.

Buffalo — Steady at 32.5 per cent, with the same rate scheduled for this week.

Birmingham, Ala. — Held at 83 per cent for fourth consecutive week, with 19 open hearths active.

Cincinnati — Down 12 points to 43 per cent after five weeks at 55 per cent. One interest shut down for repairs but will resume this week.

New England — Up 5 points to 65 per cent, with further gain indicated for this week.

Pittsburgh — Loss of 2 points to 48 per cent on curtailment by larger interests, several smaller producers showing gains.

Wheeling — Gained 3 points to 74 per cent.

Cleveland — Increased 1 point to 52 per cent. Reduced operations at one plant were more than offset by addition of two open hearths at another.

Central eastern seaboard — With two plate mills and a rail mill increasing activity the rate rose 3 points to 40 per cent.

■ Creation of a maintenance division, the fourth plant division to be established at Carnegie-Illinois Steel Corp.'s Gary works, has been announced. Maintenance formerly was on a departmental rather than divisional basis. The new supervisory staff will be headed by C. J. Smith, who has been superintendent of the maintenance department since May, 1936.

MEN OF INDUSTRY

■ HARVEY B. JORDAN has been appointed vice president, American Steel & Wire Co., Cleveland. Mr. Jordan will be in charge of operations, and succeeds M. W. Reed, recently made chief engineer for Carnegie-Illinois Steel Corp., Pittsburgh.

Mr. Jordan has been in the employ of the Wire company 25 years, having started as a chemist at Central furnaces and docks in Cleveland during his college vacation period in the summer of 1914. In June, 1915, he was placed permanently with the company, being employed as clean-up foreman at the same plant. He then moved up through the ranks until he was named assistant vice president in January, 1937. He is a member, American Society for Metals, Eastern States Blast Furnace and Coke Oven association, American Iron and Steel institute.

Harvey B. Jordan

♦

Clarence E. Sims, metallurgical supervisor, Battelle Memorial institute, Columbus, O., is in England studying developments in the iron and steel industry.

♦

Don Maloney, for many years with Marvel Carburetor Co., Flint, Mich., and the Borg-Warner Corp., Rockford, Ill., has been named assistant to the president, Pierce Governor Co., Anderson, Ind.

♦

Edward A. Johnston, vice president in charge of engineering and patents, International Harvester Co., Chicago, has retired after 45 years of service with the company and its predecessors. He has been succeeded by A. W. Scarratt, his assistant since 1936. In 1938 he was awarded the Cyrus Hall McCormick medal of the American Society of Agricultural Engineers, in recognition of his "exceptional and meritorious engineering achievement in agriculture."

Mr. Scarratt joined the company in 1927 as chief engineer of motor trucks and coaches; in 1935 was promoted to chief of automotive engineering, and a year later became assistant to Mr. Johnston.

E. A. Johnston

♦

Swen G. Pulson, associated with Norton Co., Worcester, Mass., 15 years, and recently field engineer in the Cleveland district, has been transferred to Sweden, where he will work with Norton distributors in Sweden, Finland, Norway and Denmark.

♦

N. K. Van Osdol, for several years assistant to the president, Borg-Warner Corp., Chicago, has been appointed to represent the products of the Ingersoll Steel & Disc division of that corporation in the Detroit and eastern Michigan areas, with offices at 6432 Cass avenue, Detroit.

♦

James H. Robins has been elected president and a director, American Pulley Co., Philadelphia, succeeding Charles E. Brinley who becomes chairman of the board. Mr. Brinley recently was elected president, Baldwin Locomotive Works. Mr. Robins was previously associated in a sales capacity with Pennsylvania Salt Mfg. Co.

♦

Thomas M. Bohen, vice president, Whitehead Metal Products Co. Inc., subsidiary of International Nickel Co. Inc., New York, has been elected president to succeed the late J. J. Whitehead. Herbert G. Fales, a vice president of International Nickel, has been elected vice president, Whitehead Metal Products, and Clayton D. Grover, has been made assistant to the president.

♦

Allen D. Byers, resident manager of Fisher Body Baltimore division, General Motors Corp., Detroit, has been named resident manager of Fisher Body St. Louis division, succeeding the late Vincent M. Dirkes. Carl E. Hoehn, resident manager of Fisher Body Buffalo division, succeeds Mr. Byers at Baltimore, and Harlow D. Burnside, superintendent of the South unit of Fisher Body No. 1 plant, Flint, Mich., now is resident manager at Buffalo

♦

Charles M. Grannis and R. J. Perkins have been appointed service engineers, Carboloy Co. Inc., Detroit, maker of cemented carbide tools, dies and wheel dressers. Mr. Grannis has had 26 years of practical experience in the metalworking field.

Mr. Perkins the past 21 years has been with the Reo Motor Car Co., 16 years as assistant chief inspector and five years as chief inspector in charge of tool and gage design.

♦

William S. Unger has been appointed general superintendent, Lorain division, Carnegie-Illinois Steel Corp., Johnstown, Pa. A graduate of Cornell university, 1916, he began work at the Carrie blast furnaces of Carnegie Steel Co. After serving as an ensign in the aviation corps in the World war, he worked at Carnegie's Duquesne and Clairton blast furnaces. In 1924 he was made assistant blast furnace superintendent, Carrie furnaces, and four years later became superintendent. In 1930 he was transferred to the Homestead works as assistant superintendent; in 1937 was named general superintendent,

William S. Unger

Pencoyd, Pa., works, and late in 1938 entered the general offices of Carnegie-Illinois as staff engineer.

♦

P. W. Clapp, Detroit district manager, Norton Co., announces the following changes in the Detroit sales organization: Fred L. Curtis, Jackson, Mich., has been transferred to Detroit, to succeed Paul Brown, who has become resident manager of Australian Abrasives Pty. Ltd., Sydney, Australia. S. J. Bell, office manager at Detroit, has taken over Mr. Curtis' territory in Jackson, and Milton J. Cowan has been transferred from the home office in Worcester, Mass., to succeed Mr. Bell as office manager.

♦

C. I. Ritchie has been elected executive secretary, Gray Iron Founders' Society Inc., Cleveland. Mr. Ritchie has had wide experience in the gray iron foundry field and is a specialist in foundry cost accounting and plant engineering. He has been a member of the society's staff five years.

♦

James Henderson will be awarded the Bessemer gold medal this year

James Henderson

by the council of the Iron and Steel institute (Great Britain). The medal was founded by Sir Henry Bessemer for distinguished merit in promoting the technical and metallurgical development of the iron and steel industry. Mr. Henderson was associated with the technical development of the Frodingham Iron & Steel Co. Ltd., North Lincolnshire, 45 years, and held all positions from chief metallurgist to managing director. He is now deputy chairman of the renamed Appleby-Frodingham Steel Co. Ltd.; a director, United Steel Companies Ltd.; past president, British Iron and Steel Federation and the Lincolnshire Iron and Steel institute; former chairman, Lincolnshire Ironmasters' association and Iron and Steel Industrial Research council; a member of council and honorary treasurer, Iron and Steel institute.

♦

W. D. Falkenstein has been appointed district manager, Pittsburgh office, Electric Controller & Mfg. Co., Cleveland. He succeeds A. C. Dyer, who has become general sales manager of the company, with headquarters in Cleveland. After serving in the navy during the World war, Mr. Falkenstein returned to Carnegie Institute of Technology, graduating in 1921. While attending school and during vacation periods he was employed at the McKeesport, Pa., plant of National Tube Co., and after graduation joined the Duquesne Light Co. In 1923 he joined the Electric Controller organization, working in the Pittsburgh district.

♦

C. E. Stenson has been elected president, Youngstown Steel Tank Co., Youngstown, O. Starting in the plate fabricating business as a boilermaker's helper, he later became associated with the Petroleum Iron Works, in sales and estimating. In 1933 he joined Youngstown Boiler & Tank Co. as sales representative, and subsequently became sales and works manager. In 1934 when the company was placed in receivership he was appointed general manager for the receivers. The receivership was dissolved in 1937, the properties and facilities being purchased by a group of Youngstown business men who incorporated the Youngstown Steel Tank Co. Mr. Stenson was then elected vice president and assistant treasurer.

DIED:

■ EMANUEL J. BLOCK, 57, vice president and a director, Inland Steel Co., Chicago, in Phoenix, Ariz., March 5 while on a vacation. Mr. Block joined Inland in 1901; was made vice president in 1919 and for a number of years had been in charge of purchasing. He is a brother of Leopold E. Block, chairman of the board, and Philip D. Block, president of the company.

Emanuel J. Block

♦

George A. Balz, 54, president, Seaboard Refractories Co., Perth Amboy, N. J., Feb. 23 in Elizabeth, N. J.

♦

Fred E. Key, 70, vice president and general manager, Key Co., East St. Louis, Ill., maker of power plant and oil refinery equipment, in that city, Feb. 26.

♦

Vincent M. Dirkes, 44, since 1934 manager, Fisher Body division of General Motors Corp., St. Louis, in that city, Feb. 17.

♦

Frederick M. McPherson, associated with M. A. Hanna Furnace Co. the past 26 years, a subsidiary of Great Lakes Steel Corp., in Detroit, recently.

♦

E. J. Lee Rust, 62, well known engineer and resident representative at Birmingham, Ala., for the Rust Engineering Co., Pittsburgh, March 3 in that city.

♦

Judson Jay Whitehead, 58, founder and president, Whitehead Metals Products Co. Inc., a wholly owned subsidiary of International Nickel Co. Inc., New York, in that city, March 1.

♦

Anthony Hoensheid, 79, vice president, Commercial Steel Treating Corp., Detroit, in Cincinnati, recently. From 1903 to 1924 he was heat treating engineer for Detroit Twist Drill Co. Later with his son, Ralph J., he organized the Commercial corporation, his son serving as president. He was a charter member, American Society for Metals.

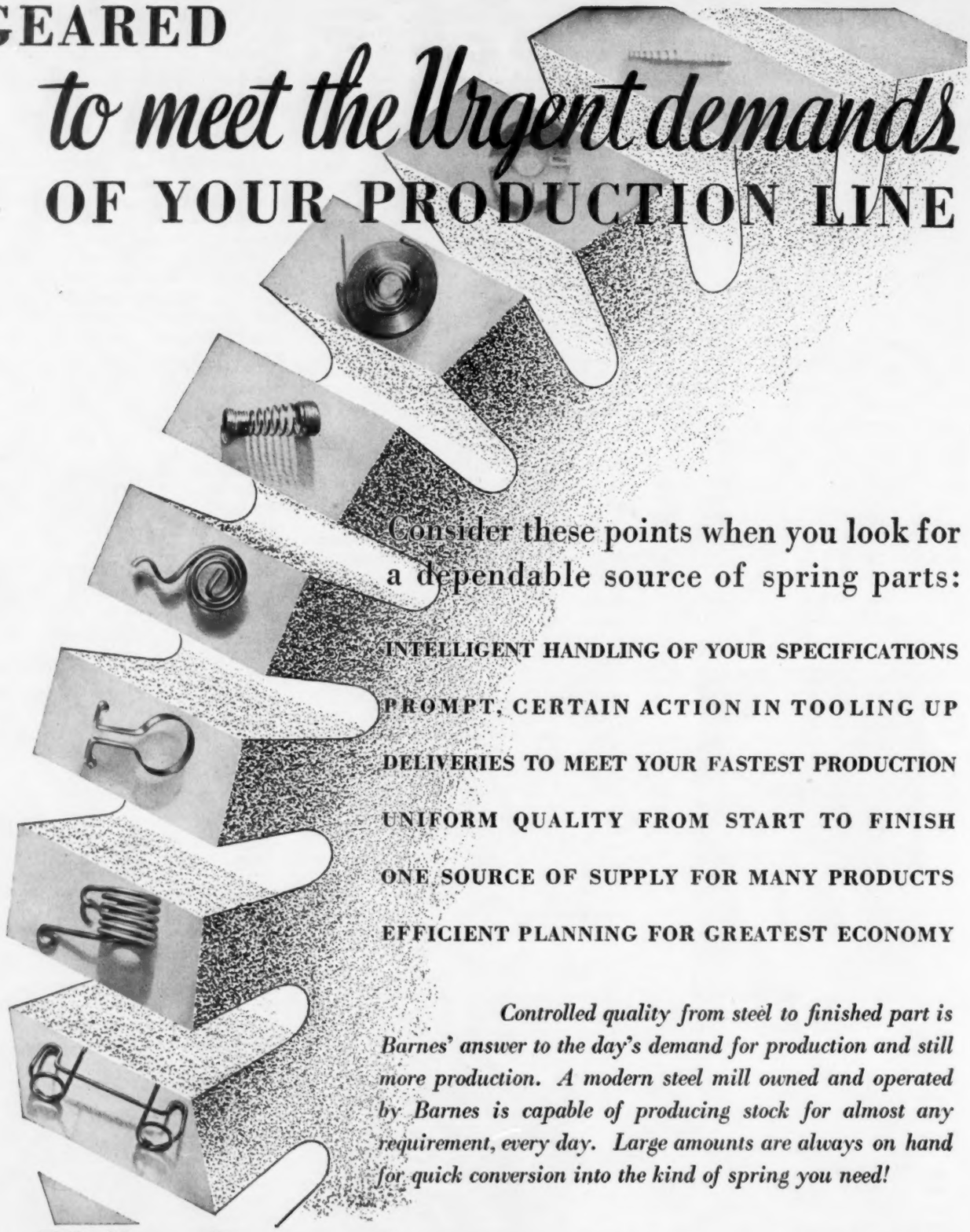
♦

George W. Wildin, 69, former general manager, Westinghouse Air Brake Co., Wilmerding, Pa., Feb. 28 in Pittsburgh. He was also general manager, Westinghouse Traction Brake Co. and Westinghouse Draft Gear Co., and was a member, American Institute of Electrical Engineers, American Society of Mechanical Engineers.

♦

William W. Willock, 76, of Sewickley Heights, Pa., a director of Jones & Laughlin Steel Corp., Pittsburgh, March 8 at Syosset, Long Island. Mr. Willock became associated with Jones & Laughlin in 1895 as general manager of its subsidiary, the Monongahela Connecting railroad, and in 1901 was made director and vice president. In 1902 he became a director of Jones & Laughlin.

GEARED *to meet the Urgent demands* OF YOUR PRODUCTION LINE



Consider these points when you look for a dependable source of spring parts:

INTELLIGENT HANDLING OF YOUR SPECIFICATIONS

PROMPT, CERTAIN ACTION IN TOOLING UP

DELIVERIES TO MEET YOUR FASTEST PRODUCTION

UNIFORM QUALITY FROM START TO FINISH

ONE SOURCE OF SUPPLY FOR MANY PRODUCTS

EFFICIENT PLANNING FOR GREATEST ECONOMY

Controlled quality from steel to finished part is Barnes' answer to the day's demand for production and still more production. A modern steel mill owned and operated by Barnes is capable of producing stock for almost any requirement, every day. Large amounts are always on hand for quick conversion into the kind of spring you need!

The Wallace Barnes Company • **BRISTOL, CONNECTICUT**

DIVISION OF ASSOCIATED SPRING CORPORATION

SPRINGMAKERS FOR MORE THAN THREE QUARTERS OF A CENTURY

Barnes-made SPRINGS

Windows of WASHINGTON

By L. M. LAMM
Washington Editor, STEEL

WASHINGTON

■ JUSTICE JENNINGS BAILEY heard auguments three days last week in the United States court of appeals for the District of Columbia in connection with the appeal of three eastern steel mills from the minimum wage decision of Secretary of Labor Perkins under the Walsh-Healey act. Justice Bailey said Thursday that he would announce a decision March 13.

Justice Bailey said that the steel companies had established their right to a standing in court in this case, something the government contended they did not have.

A temporary restraining order is standing and if Justice Bailey decides this temporary order should be extended or made permanent, the government will be given a chance to make further argument. Also if the order is extended the SWOC, which has been trying to enter the case as a friend of the court, will be given an opportunity to argue why it should be granted that privilege. Should it be held that the temporary order should not be extended no further argument will be heard and the case will be closed, certainly so far as that court is concerned.

Claims Authority Exceeded

The three steel companies, including Lukens Steel Co., Coatesville, Pa., Alan Wood Steel Co., Conshohocken, Pa., and Central Iron & Steel Co., Harrisburg, Pa., contend that the secretary of labor arbitrarily exceeded her authority under the Walsh-Healey act in determining the wage scales. They claim they would be "irreparably damaged" if the wage scale is imposed. It is argued by counsel for the steel companies that the secretary's interpretation was so broad that in one instance the secretary designated as a "locality," 13½ states from Maine to West Virginia. It was claimed that in those states at the time only three companies were paying the 62½ cent rate which was subsequently imposed under the decision.

Justice Bailey stated that the preliminary injunction granted the steel companies March 1 against enforcement of the minimum wage order would be continued until a final disposition of the case.

MUCH APPEASEMENT TALK BUT NO DEFINITE ACTION

Plans for the appeasement of business by the Roosevelt administration went on last week through a series of conferences. No concrete plans have developed which will give business more confidence, but there is no question the feeling of administration officials toward business has changed during the past fortnight.

However, when the President was asked point blank at a press conference last week whether he favored modification of the capital gains levy or the repeal of the undistributed profits tax, he sidestepped the question by stating he would have to see the amount brought in by these taxes. He did reiterate, however, what he has said several times recently, that he will not ask the present congress for new major legislation, and he has strongly indicated that he does not care how soon congress adjourns.

Speaker Bankhead, following a conference last week with the President and some of the leaders of congress, told newsmen that the President and the administration generally have definitely adopted a policy of co-operation with business. Administration officials, however, refuse to comment on the fact that while administration leaders are talking appeasement the federal trade commission is pecking at several large industries in its testimony before the temporary national economic committee.

There is a definite drive on Capitol Hill for curtailment of government expenditures, about which the President refuses to comment. At a press conference last week, he told the correspondents, when asked a question about government economy, that they were simply trying to write stories to make a rift between congress and the White House.

As is well known, Vice President Garner is much interested in economy and the possible lifting of the tax load from business. Mr. Garner gave a luncheon party last week for some senators who feel as he does, at which Bernard M. Baruch, New York financier, made a talk. As is well known, Mr. Baruch is very anxious to curtail government spending.

Senator King, Utah, last week introduced a bill to repeal the undistributed profits tax as a possible move to aid business, and Senator Herring, Iowa, who headed a special committee of the senate on incentive taxation, said that his committee is preparing a report that will make specific recommendations designed to increase business confidence.

Hopkins Sees Income Grow

Senator Byrd, Virginia, has prepared a government reorganization bill which would definitely commit the federal government to economy.

Secretary of Commerce Hopkins at a press conference last week continued his Pollyannish attitude toward business and expressed the opinion the national income this year would increase 8 or 10 billion dollars. He said he does not see any use in making speeches about business appeasement "if you are not going to do something about it." In connection with this development, Mr. Hopkins objected to the word "appeasement."

The secretary said that the administration has no new reform bills in mind as the whole reform program has been put on the statute books. He said, however, that the administration has no idea of

retreating on any of the reform program. Mr. Hopkins stated he had discussed the business situation "on many fronts" and while he does not feel that any one suggestion will do any good that all of them taken together will undoubtedly help. He said that in his opinion government and business must go hand in hand and "government must help business on a hundred and one fronts." Government and business have a common purpose and a common interest. Asked for specific instances of what he has in mind, the secretary said that he was not ready to make any announcement.

TOWER DEFINES STEEL STREAM POLLUTION STAND

The attitude of the steel industry toward stream pollution was explained last week to Representative Mansfield, Texas, chairman of the house committee on rivers and harbors, by Walter S. Tower, executive secretary of the American Iron and Steel institute. A number of stream pollution bills are pending before this committee.

Mr. Tower stated that the "iron and steel industry is not opposed to the orderly clearing up of stream pollution problems which result from industrial waste. But as no method has been discovered for eliminating stream pollution, as caused by waste from steel mills, which is of immediate economic practicability for members of the steel industry, we believe any movement toward clearing up the problem should be extended over a considerable period. On that basis we are proceeding as rapidly as possible and are ready to do our part in trying to eliminate stream pollution."

Mr. Tower called the chairman's attention to the fact that the institute has established a fellowship at the Mellon Institute of Industrial Research to study the problem and the various methods of dealing with it. "This centralized project," Mr. Tower said, "is over and beyond the continuing research work and investigations conducted by practically all the important producing companies in the industry. The peculiar difficulty of our problem is that the proposed methods which might be workable on a large scale technically, are not yet ecoonmically feasible.

"To sum up, therefore, we urge that your committee consider favorably stream pollution legislation of the 'study plan' type as distinguished from that of the so-called drastic 'control' type."

At the last session a stream pollution bill was passed which was vetoed, due to certain technicalities. In the bill now pending the President's objections have been met. The President has sent a special message to congress urging that some stream pollution bill be passed.

In addition to the fact that the senate commerce committee has made a favorable report on water pollution control, the house committee held hearings last week on somewhat similar bills.

WOULD MAKE WAR DEBTS FURNISH WAR MATERIALS

Representative Barry, New York, last week introduced an unusual resolution in the house (H Res. 109) calling attention to the fact that the senate military affairs committee has reported a bill authorizing $100,000,000 for purchasing essential war materials.

The resolution calls attention to the war debts owing to the United States and resolves that "the President is hereby requested to enter into negotiations with foreign governments which are indebted to the United States, which are (1) to furnish the United States with strategic materials for national defense purposes and (2) to make available to the United States geographic points which are of strategic importance for national defense, in payment or part payment of the indebtedness of such governments to the United States."

House military affairs committee, which had planned legislation to allow the war department to accumulate a reserve of strategic war materials to the extent of $100,000,000, has been informed by Louis Johnson, assistant secretary of war, that the President will not approve expenditure of more than $10,000,000 for this purpose at present.

BRAZIL SEEKS AID TO DEVELOP ORE RESOURCES

Foreign Minister Oswaldo Aranha of Brazil proposes that the export-import bank, a government organization, extend a $5,000,000 credit to aid development of iron ore areas in his country.

Brazil has offered this country access to the undeveloped ore deposits in return for financial assistance in developing Brazil's vast mineral resources. This is one of the principal objectives of the conversations which Mr. Aranha has been holding with state department and financial officials.

WALSH-HEALEY IRON, STEEL PURCHASES TOTAL $297,969

During the week ended March 4, the government purchased $297,968.95 worth of iron, steel and their products under the Walsh-Healey act as follows: Lansdowne Steel & Iron Co., Morton, Pa., $12,581.25; Tennessee Metal Culvert Co., Knoxville, Tenn., $13,011.49; Tri-State Mine & Mill Supply Co., Cumberland, Md., $15,176.88; Republic Steel Corp., Cleveland, $10,695.63; Carnegie-Illinois Steel Corp., Pittsburgh, $36,637.10; Reeves Steel & Mfg. Co., Dover, O., $12,488.28; Sheet Metal Mfg., division of Reliance Steel Corp., Youngstown, O., $63,466.09; Cleveland Range Co., Cleveland, $26,775 (estimated); J. C. Pitman & Sons Inc., Lynn, Mass., $10,302 (estimated); G. S. Blodgett Co. Inc., Burlington, Vt., $9199.80 (estimated); Edge Moor Iron Works Inc., Edge Moor, Del., $20,946.75 (estimated); Bethlehem Steel Co., Bethlehem, Pa., $37,768.68; Baldwin Southwark Corp., Eddystone, Pa., $16,200; and Hammond Iron Works, Warren, Pa., $12,720.

BROOKINGS STUDY POINTS WAY TO REDUCE SPENDING

Possibilities of economy through mere structural reorganization of federal administrative agencies are relatively minor in comparison with those which might be realized by elimination and curtailment of activities, according to a study made public by the Brookings Institution, a non-governmental organization. Savings large enough to play a really important part in bringing government outgo down to the level of income can come only from elimination and curtailment of certain types of activities, a step which involves large issues of public policy.

The entire budget for operation of administrative agencies, including the administration of all "emergency" activities, was $1,827,318,000 in the past fiscal year, which was approximately 17.65 per cent of the total available for expenditures.

The study, which was made by Dr. Lewis Meriam, chairman of the institute for government research, and Dr. L. F. Schmeckebier, points out that two procedures may be utilized in seeking these larger sav ings.

One involves subjecting all present functions and activities to a rigorous, detailed pruning process, which involves examining the many activities of executive agencies, abandoning those which are not regarded as essential and reducing others to the necessary minimum.

The second procedure involves development of a more consistent social and economic program through re-examination of broad policies that are now in conflict. Such major problems are involved as the elimination of conflicting government price policies; encouragement of private enterprise so that economic, self-sustaining employment may be substituted for government-made work and the relief of employable persons; and the development of a healthy co-ordinated and self-supporting transportation system. Improvement in such major matters would both reduce governmental expenditures and add to revenues.

AVIATION

MORE DETAILS ON PLANTS, EQUIPMENT AND ORDERS

■ HIGHLIGHTING current aeronautical plant expansion schedules is General Motors Corp.'s reported plan to construct a new factory in Indianapolis for its Allison airplane engine division. Now in the sketch stage, project is estimated to cost $12,000,000.

Shifting of its manufacturing divisions announced recently by United Aircraft Corp. involves transferring Chance Vought aircraft division from East Hartford to Stratford, Conn., and combination with Sikorsky aircraft, whose plant will be expanded. Production equipment and some 900 employes are to be moved.

Company also will enlarge the East Hartford plants of Pratt & Whitney motor division by 100,000 square feet, and Hamilton Standard propeller division by 44,000 square feet. Machinery purchases are anticipated.

E. G. Budd Mfg. Co., Philadelphia, as part of present expansion for producing stainless steel airplane assemblies, is reported considering erecting a branch plant in California.

Lockheed Expansion Continues

Lockheed Aircraft Corp. has begun constructing an office addition and a new 50 x 220-foot metal press department at its Burbank, Calif., plant. Including machinery and power equipment, cost will approximate $100,000.

This company has booked a $690,000 order for 12 bombers for Netherlands East Indies. Award came from a Dutch military mission, recently-arrived to purchase American bombing and pursuit planes.

Congress last week accelerated legislation for defense aviation. The $499,857,936 war department supply bill passed by the house includes 784 fighting airplanes. Senate meanwhile acted on the $358,000,000 emergency air corps expansion measure, amending it by authorizing purchase of 3532 new planes, 500 more than originally provided, and giving the air force a 6000-craft limit. Another amendment restricted manufacturers' profits under projected contracts to 10 per cent.

Aeronautical products ordered by the army recently: Boeing Aircraft Co., Seattle, spare parts, $120,007; Sperry Gyroscope Co. Inc., Brooklyn, N. Y., instrument parts, $108,567. By the navy: Link Aviation Devices Inc., Binghamton, N. Y., instruments, $116,129.

To Build Military Aircraft

Northrop Aircraft Inc. has been organized in Los Angeles, with preliminary plans for manufacturing military planes. Headed by Lamotte T. Cohu, formerly president of Aviation Corp., the new company expects to build a modern plant.

Anticipating increased demand for light airplanes, builders of this type show increased activity. Government requirements alone over the next two years are estimated at 1000 lightplanes, based on needs in training army and civilian pilots.

Now undergoing army tests at Wright field, Dayton, O., are 18 light craft submitted by a dozen manufacturers in bid competition for "basic trainers" of less than 225 horsepower. This represents the first opportunity in years for many builders of light, low-powered ships to enter federal bidding.

Aeronautical Corp. of America, Cincinnati, has received an order for seven light trainers from the Union of South Africa. This is the largest government training plane order Aeronca has booked in nearly a decade.

Companies recently moving into the field with new types of planes: Phillips Aviation Co., Van Nuys, Calif.; Max Harlow Co., Alhambra, Calif.; Timm Aircraft Corp., Glendale, Calif.; Vega Airplane Co., Burbank, Calif.; and Engineering & Research Corp., Riverside, Md.

Newly-organized Allied Aircraft Corp. has purchased a plant at North Tonawanda, N. Y., and is remodeling and installing equipment for producing sport trainers.

Luscombe Airplane Corp., West Trenton, N. J., maker of lightplanes, has nearly completed a $50,000 plant addition, doubling its capacity. Lenape Aircraft & Motors Inc., Matawan, N. J., also is enlarging its plant to increase facilities for building lightplanes. In both instances design and construction is by the Austin Co.

Edo Aircraft Corp. Inc., College Point, N. Y., producer of all-metal floats, is expanding its facilities to manufacture other metal parts and assemblies for light craft.

New Types of Meehanite

■ Fulton Foundry & Machine Co., Cleveland, was host to 250 engineers and industrial executives at a meeting and dinner, March 9 in Hotel Mayflower, Akron, O.

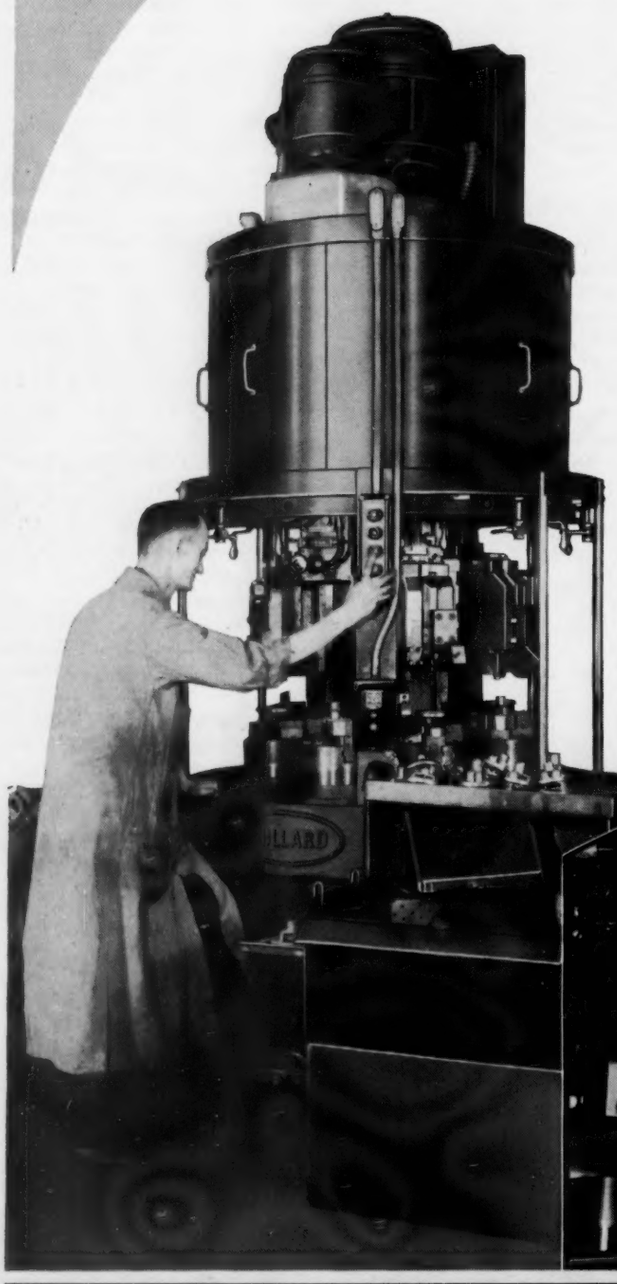
A. C. Denison, president, described three recently developed types of Meehanite resulting from co-operative research. These are a superhard wearing type, an alloyed type, and a superior high tensile type, 60,000 pounds per square inch, having unusual hardness though readily machinable.

Latest Giant and Midget, All-Metal; Lightplane of Only 50 Horsepower

■ Metal's versatility in aircraft construction is demonstrated by these latest all-metal planes. Boeing's mighty 22-ton "flying fortress" bomber; and the dainty 650-pound Luscombe "50" lightplane, country's lowest-powered all-metal craft. Boeing company now is building 39 "fortresses" for army air corps

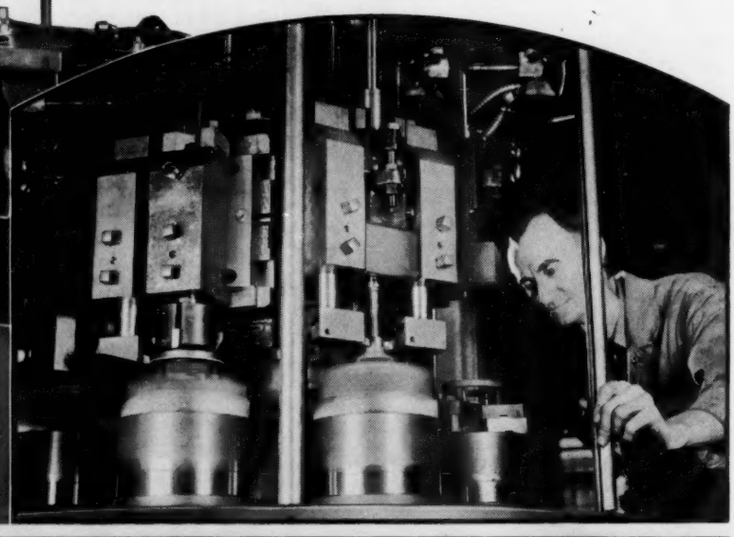
SATISFIED USERS ··

tell the story



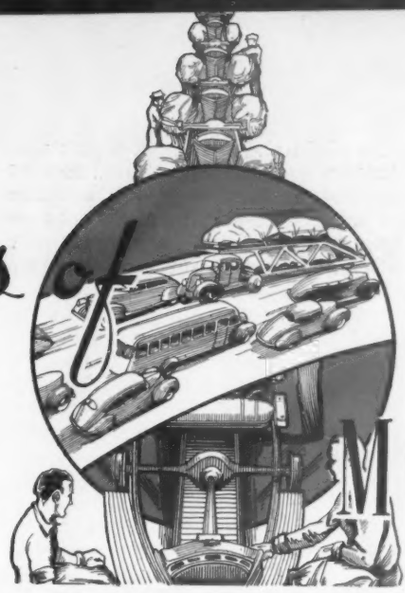
These new Type "J" Mult-Au-Matics in the field have equalled, if not bettered, their expected Performance. Some of these machines are scheduled for single jobs on long runs. Others are tooled and scheduled for short run variety work. Whatever the case may be, Bullard "J" Series 7-inch and 11-inch are producing to dimension, quality, and Profit specifications.

For proof of the statement, Bullard "J-7" and "J-11" Mult-Au-Matics can Profitably improve manufacturing operations," ask Bullard Engineers to submit estimates on these smaller, faster Mult-Au-Matics as applied to your work. Let us give you facts as to what these machines are doing for others.



THE BULLARD COMPANY
BRIDGEPORT, CONNECTICUT

Mirrors of MOTORDOM



By A. H. ALLEN
Detroit Editor, STEEL

Material appearing in this department is fully protected by copyright, and its use in any form whatsoever without permission is prohibited.

DETROIT

■ STUDEBAKER'S nominee to make a "Big Four" out of the "Big Three" was unwrapped here Tuesday before 400 dealers, newsmen and others. The Champion, as the new light-six model is called, has been in process of development since the spring of 1935, according to youthful sales manager C. S. Fletcher, and is scheduled for formal introduction to the public April 1, when radio advertising will be started. Private showings in key cities will continue until March 20. Publication advertising will be started April 13 and an advertising budget of $1,250,000 has been allotted for launching the new model which incidentally, is priced squarely in the Big Three range—$660 and up.

Preceding the display of the new cars, a carefully dramatized motion picture was unreeled, giving details of how the Champion was planned and engineered. Starting with the knowledge that 89 per cent of all incomes in this country are $3000 or less, and that two-thirds of all car sales are made in the Chevrolet-Ford-Plymouth price field, Studebaker determined to build a car to fit this market, completely standard as far as size and appointments were concerned but at the same time completely new, 15 per cent lighter and with no parts interchangeable with other larger models.

Light Weight Is Feature

In appearance the Champion is patterned closely after present Studebaker models, although the windshield has been straightened up somewhat and a central radiator grille added to supplement the two catwalk grilles. The front end design is faintly suggestive of the styling used by Hudson this year. No radical departures have been made in construction. Conventional type of channel frame with X-member in the center is used. To this is bolted the all-steel body made up of welded panels, roof and floor. An innovation is the use of a pitch-like sound deadening material on the underside of the floor pan.

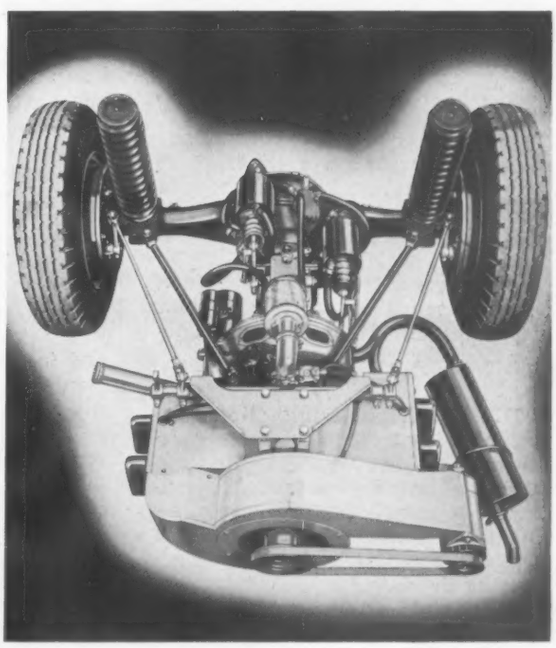
Chief feature, however, is a remarkable reduction in overall weight to around 2400 pounds, or approximately 500 pounds less than competitive cars. This weight reduction, at no sacrifice of roadability, naturally is accompanied by appreciable savings in fuel consumption.

Many a newspaper man at the preview let his thoughts roll back to another preview just about a year ago when, in the same building, another so-called independent manufacturer unveiled an out-of-season model in much the same dramatic fashion. This was the Hudson 112, which also was injected in the lowest-price field and aimed to make-over the Big Three into the Big Four. So, perhaps, the Studebaker Champion should be more properly considered a concerted effort to change the Fig Four into the Big Five. The 112, of course, is still in production although it has been given a facial treatment in recent months to bring the front-end design more into conformance with the other models in the Hudson line.

Studebaker officials conservatively have estimated 1939 model production for the entire industry will total 2,700,000, and they are out to

Truck Engine Air-Cooled

■ **Complete power unit, including 4-cylinder air-cooled engine mounted integral with rear axle, clutch and transmission, as developed for use in new house-to-house delivery truck being built by White Motor Co., Cleveland. (See Mirrors of Motordom, Feb. 27). Power assembly is easily removable and interchangeable on two truck models, one with 99-inch and the other with 116-inch wheelbase**



capture 6-10 per cent of this figure in sales, or 162,000-270,000 cars. In the calendar year of 1937, Studebaker sold 93,576 cars, or 1.87 of the industry's total; in 1938, 50,977 or 1.92 per cent of the total.

Performance in coming months will be watched eagerly, and most unbiased observers are pulling for Studebaker to achieve its ambitious goal, for it is generally conceded independent manufacturers are vital to the automotive industry for healthy progress, although their path to profits is a rocky one.

■ STEEL circles are buzzing with undercover reports of a new deep drawing sheet which one of the major producers is supposed to have discovered, apparently accidentally. Some weeks ago, metallurgists of this company concocted what they thought would be an improved steel for sheet stock. Erichsen cupping tests for ductility showed no marked difference from the regular material, so a production heat was poured and rolled into sheets for fender stock.

A shipment of these sheets was made to a stamping plant where they were fabricated into fenders. Normally, rejects on fender operations run around 5 per cent, possibly somewhat higher. On a run of 350 fenders from this special steel, not a single reject was experienced. Dumfounded, production experts called in steel mill metallurgists to find out what variety of supersteel this was. But the metallurgists were as much surprised as the production experts and immediately rushed back with samples to their laboratories to determine what miracle they had wrought.

As matters stand now, it is not known whether the improved qualities resulted from a change in chemical analysis, melting technique, rolling practice or some other variable. The news spread among other steel producers who have been prodding their metallurgists to find out whether a major revolution in cold drawing sheet steel is in process. Eventually, of course, the mystery will be solved and the details made public. Meanwhile there is little to do but speculate as to whether a slight increase in sulphur content may have brought about the superior drawing qualities.

■ INTERESTING suggestion has been made by a Cleveland newspaper economist, Russell Weisman, on the subject of new car models. He wonders if it might not be a good idea to pass up entirely, for one year, the idea of new models, instead of advancing the date for 1940 styles.

"Why not decide, for example," he writes, "that there would be no new 1940s and that next year's production would be on the basis of current models, with the addition of such genuine improvements as might come along in the meantime? Why not proceed for a trial period on the thesis that a slight change in the shape and dimensions of the hood does not create a new automobile and that no useful purpose can be served in the end by saying it does, and thus depreciating sharply the value of all cars which have not these latest frills?"

"It might very well be a good thing for the motor car industry, now that its product has been pretty well established, if it soft-pedaled the new model idea for a while and tried out a policy of selling good transportation at the most attractive price possible. When every year brought major improvements, the new model idea was sound and proper, but like a good many ideas it may well be overdone now that really important changes are few and far between."

From a manufacturing standpoint, this appears to be sound thinking and a policy which would be welcome in most plants, but, of course, from a sales angle the philosophy is little short of heretical.

■ GRAHAM has released materials and parts for an additional lot of 650 cars, shipments to be completed by March 20. Production has been running at a rate of 140 per week for the past three weeks. The company announced last week it is seeking a new name to identify the close-coupled or combination coupe model it is building, and Fred Bishop, sales manager, will offer a prize of $20 per word for the best suggestion.

Plymouth has begun shipments of a new 7-passenger sedan model on 134-inch wheelbase, largest of its type ever built. Seating nine passengers comfortably the car is standard with other Plymouths mechanically except for larger brakes and a slight increase in gear ratio.

Figures on the production of 1939 Chrysler Royal models to date show the percentage of black cars sold is the smallest in years—25.8 per cent. Color engineers theorize this indicates the buying public is in a cheerful and confident mood and business in general is due for an upturn. Black still remains the largest single choice in color however, followed by Nordic gray 17.2 per cent, light green 12.7, light blue 11.6, maroon 9.4, beige 8.7, dark green 7.5 and dark blue 6.9.

February sales of Willys-Overland were up 99.79 per cent over a year ago, and J. W. Frazer, new president, reports the present outlook bright with 358 new dealers and distributors appointed in recent months.

Automobile Production

Passenger Cars and Trucks—United States and Canada

By Department of Commerce

	1937	1938	1939
Jan.	399,186	227,130	353,946
Feb.	383,900	202,589	*315,000
March	519,022	238,598	.....
April	553,231	238,133	.....
May	540,377	210,183	.....
June	521,153	189,399	.....
July	456,909	150,444	.....
Aug.	405,072	96,936	.....
Sept.	175,630	89,623	.....
Oct.	337,979	215,296	.....
Nov.	376,629	390,350	.....
Dec.	347,349	407,016	.....
Year	5,016,437	2,655,777	.....

*Estimated.

Estimated by *Ward's Reports*

Week ended:	1939	1938†
Feb. 11	84,500	57,810
Feb. 18	79,860	59,100
Feb. 25	75,660	56,977
March 4	78,705	54,440
March 11	84,095	57,438

†Comparable week.

	Week Ended Mar. 11	Mar. 4
General Motors	36,165	35,255
Chrysler	16,200	19,835
Ford	20,425	15,400
All others	11,305	8,215

LAND YACHT HAS RADIO TRANSMITTER, "TENDER"

A new high in something or other is established in the trailer-office or land yacht recently put into commission by Myron Zobel, eastern advertising executive. The all-steel insulated trailer, powered by a Chevrolet cab-over-engine truck, comprises a traveling home, short-wave amateur radio station, sleeping space for six, kitchenette, tile bath, radio receiver and phonograph, typewriter, dictaphone, filing cabinets, dining space and lounging room for ten.

Completely air conditioned by a separate power plant, the quarters also are steam heated and indirectly lighted. Two generators supply power for the air conditioning unit and radio transmitter; 18 storage batteries provide lighting current; storage tanks carry 72 gallons of water and 65 gallons of gasoline.

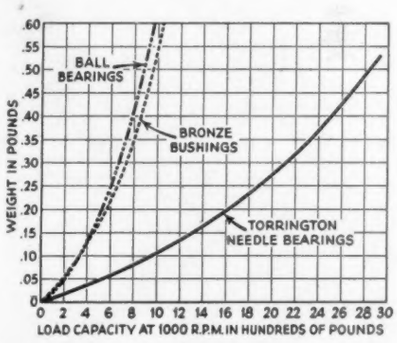
When traveling, occupants of the trailer can mount to a forward deck and enjoy the scenery by looking out over the truck cab, at the same time watching the behavior of instruments set in a duplicate instrument panel on this deck.

Costing about $20,000, the elaborate affair even boasts its own "tender," a motor-scooter carrying two passengers, and strapped to the inside of the cab. The trailer was built by Schult Trailers Inc., Elkhart, Ind.

COMPARE THE WEIGHT

of the TORRINGTON Needle Bearing

Note from the accompanying graph the lighter weight of the Torrington Needle Bearing, compared with ball bearings and bronze bushings of the same radial load capacity. The values selected are typical; similar savings in weight are obtained at other speeds.



NOTE: Bronze Bushings to have same overall dimensions as Needle Bearings

Translate these savings in weight into terms of your finished product. When you consider that the use of Torrington Needle Bearings may save many ounces on even as small a unit as a portable tool, you will appreciate the full importance of this single feature.

And note, too, that the lower weight of the Needle Bearing is only a part of the total saving in weight. Small in size and compact in design, the Needle Bearing helps you to reduce weight in other parts of your design as well, because it allows you to use a very simple form of housing.

Unit Cost is Low

You can obtain these weight-saving advantages at very low cost. The Needle Bearing itself is surprisingly inexpensive in proportion to its capacity. Assembly cost is low, too; the bearing can be quickly pressed into the housing with a minimum of labor.

The efficient operation of the Needle Bearing means customer satisfaction, for it offers all the advantages of anti-friction construction and needs little service attention. The hardened retaining shell, with its turned-in lips, forms a reservoir to hold ample quantities of grease or oil. The rotation of the needles constantly supplies lubricant to the rotating shaft.

Consider the advantages of the Needle Bearing in your product. The Torrington Engineering Department will cooperate with you in laying out applications. For further information, write for Catalog No. 10. For Needle Bearings to be used in heavier service, request Booklet 103X from our associate, Bantam Bearings Corporation, South Bend, Ind.

The Torrington Company
ESTABLISHED 1866
Torrington, Conn., U.S.A.

Makers of Ball and Needle Bearings

Branch Offices in all Principal Cities

TORRINGTON NEEDLE BEARING

Activities of Steel Users, Makers

■ ARMSTRONG CORK CO., Lancaster, Pa., has been made exclusive distributor in the Lancaster territory for magnesia and other high temperature insulation materials manufactured by Keasby & Mattison Co., Ambler, Pa. Armstrong recently absorbed John R. Livezey Co. which distributed Keasby & Mattison products many years.

♦

Fire of undetermined origin early on March 6 caused suspension of operations in the barbed wire department of Northwestern Steel & Wire Co.'s main plant in Sterling, Ill. The steel plant, the other fabricating departments and the wire mill were not touched by the fire and continue to operate on normal schedules.

♦

Billings & Spencer Co., Hartford, Conn., has acquired the wrench division of Bemis & Call Co., and all the wrench products, including the Coes line, formerly produced by Bemis & Call, will be manufactured and shipped from Billings & Spencer's Hartford plant.

♦

Bucyrus-Monighan Co., Chicago, controlled by Bucyrus-Erie Co., South Milwaukee, Wis., has received an order valued at $500,000 for coal and iron mine types of heavy duty excavators from a German interest, name not disclosed.

♦

Diamond Chain & Mfg. Co., Indianapolis, has appointed the following as distributors: Barrett Hardware Co., Joliet, Ill.; Iowa Machinery & Supply Co., Des Moines, Iowa; Lakeshore Machinery & Supply Co., Muskegon, Mich.

♦

Crucible Steel Co. of America, New York, has appointed Quality Steels Co., Dayton, O., and Pittsburgh Gage & Supply Co., Pittsburgh, distributors of its high speed tool and machinery steels in their respective territories.

♦

Westinghouse Electric Supply Co., subsidiary of Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., has purchased the electrical business of Iron City Electric Co., Pittsburgh. Warren I. Bickford, former secretary-treasurer, Iron City company, has become district manager, and Charles W. Ridinger, former president, is retained in an advisory capacity.

♦

W. W. Sly Mfg. Co., Cleveland, maker of dust control and blast cleaning equipment and foundry cleaning room installations, has appointed Snyder Engineering Corp., Los Angeles, representative on the West coast.

♦

Reliance Electric & Engineering Co., Cleveland, has obtained the contract for approximately half of the electric motors to be installed in the new $6,000,000 newsprint paper mill being erected at Lufkin, Tex., by Southland Mills Inc.

MEETINGS

ZINC INSTITUTE AND ITS AFFILIATE MEET JOINTLY

■ TWENTY-FIRST annual meeting of the American Zinc institute and sixth meeting of the Galvanizers committee, sponsored by the institute, will be conducted at Hotel Statler, St. Louis, April 17-18.

The Galvanizers committee will join with the institute in some sessions; will hold others of its own. Galvanized products will be exhibited during the convention.

Ernest V. Gent, 60 East Forty-second street, New York, is secretary of both organizations.

WILL ADDRESS ADVERTISERS DURING TOOL EXHIBITION

E. L. Shaner, editor-in-chief of STEEL, Cleveland, will address the Industrial Marketers of Detroit, a chapter of the National Industrial Advertisers association, at a dinner meeting at the Detroit-Leland hotel, Detroit, March 15. His subject will be "Keying Marketing Procedure to Current Conditions in Industry."

The meeting is scheduled so that sales and advertising representatives attending the second Machine and Tool Progress exhibition and convention of the American Society of Tool Engineers in Detroit, March 14-18, might attend. J. H. Ashburne Jr., Nash-Kelvinator Corp., 14250 Plymouth road, Detroit, is secretary of the Industrial Marketers.

GEARMAKERS ADVANCE DATE FOR ANNUAL CONVENTION

Annual meeting of the American Gear Manufacturers association, originally announced for May 22-24 at the Cavalier hotel, Virginia Beach, Va., has been advanced to May 15-17 at the same place. J. C. McQuiston, 602 Shields building, Wilkinsburg, Pa., is manager-secretary.

DATE FOR MIDWEST POWER CONFERENCE IS ANNOUNCED

Annual Midwest Power conference will be held at the Palmer House, Chicago, April 5-7, under sponsorship of Armour Institute of Technology, Chicago, and with seven midwestern colleges and universities co-operating. Direction of this annual event was taken over by the institute last year.

The program will be devoted to a number of topics in the power field, with emphasis on steam, electric, diesel and hydraulic energy. One paper will deal with the social significance of diesel power development. High-pressure steam metallurgy will be discussed.

Convention Calendar

March 13-15 — National Association of Waste Material Dealers. Annual meeting at Sherman hotel, Chicago. Charles M. Haskins, 1109 Times building, New York, is secretary.

March 13-18—American Society of Tool Engineers. Second annual convention and exposition at Convention Hall, Detroit. Ford R. Lamb, 2567 West Grand boulevard, Detroit, is executive secretary.

March 14—Export Managers Club of New York. Annual get together at Hotel Pennsylvania, New York. O. O. Gallup, 2 Lafayette street, New York, is secretary.

March 15—National Industrial Advertisers' association. Eastern regional meeting in Newark, N. J.

March 27-28—American Gas association. Conference on industrial gas sales at Hotel Statler, Cleveland. Eugene D. Milener, 420 Lexington avenue, New York, is secretary, Industrial Gas section.

April 1—American Foundrymen's association. Regional conference at Rutgers university, New Brunswick, N. J., under auspices Metropolitan New York-New Jersey and Metropolitan Philadelphia chapters.

April 3-7—American Chemical society. Ninety-seventh meeting in Baltimore. Dr. Charles L. Parsons, 728 Mills building, Washington, is secretary.

April 5-7—Midwest Power conference. Palmer House, Chicago, under auspices Armour Institute of Technology, Chicago.

April 12-13—American Management association. Marketing conference at Hotel Commodore, New York. Alvin E. Dodd, 330 West Forty-second street, New York, is president.

April 14-15 — American Foundrymen's association. Regional conference at Lansing, Mich., under auspices Detroit chapter and Michigan State college.

April 17-18—American Zinc institute.— Twenty-first annual meeting and sixth meeting of Galvanizers committee at Hotel Statler, St. Louis. Ernest V. Gent, 60 East Forty-second street, New York, is secretary.

April 17-21 — American Ceramic society. Forty-first annual convention at Stevens hotel, Chicago. Ross C. Purdy, 2525 North High street, Columbus, O., is secretary.

April 24-28—American Mining congress. Sixteenth annual coal convention and exposition at Music Hall, Cincinnati. Julian D. Conover, 309 Munsey building, Washington, is secretary.

April 26-29—Electrochemical society. Annual meeting at Columbus, O. Dr. Colin G. Fink, Columbia university, New York, is secretary.

■ University of Iowa, Iowa City, will offer a special three-week course, June 12-30, on motion and time study, waste elimination, cost reduction, plant layout and related subjects. The course is intended for plant managers, industrial engineers, cost accountants, methods and time study analysts.

Wait-See Attitude on Canadian Ore "Find"

■ While always considering the possibility of an important iron ore discovery in Canada, geologists and engineers for mining companies with headquarters in Cleveland last week received with skepticism the report that a deposit "estimated to contain well over 100,000,000 tons of 55 to 60 per cent" ore had been found at Steep Rock lake, Ontario.

The news was published in a Canadian mining journal, but at Cleveland it was immediately disclosed a mine operating company had already examined the property and the product of several holes drilled for testing purposes.

According to geologists, under Steep Rock lake, 135 miles west of Port Arthur, north of Duluth, there is some rich iron ore, free of sulphur, which contaminates a considerable portion of Canadian ore. How much there is in the deposit is yet unknown. The position of the ore would make it impracticable to remove a small deposit; to mine on a large scale would first necessitate heavy expense to drain the lake and divert a river.

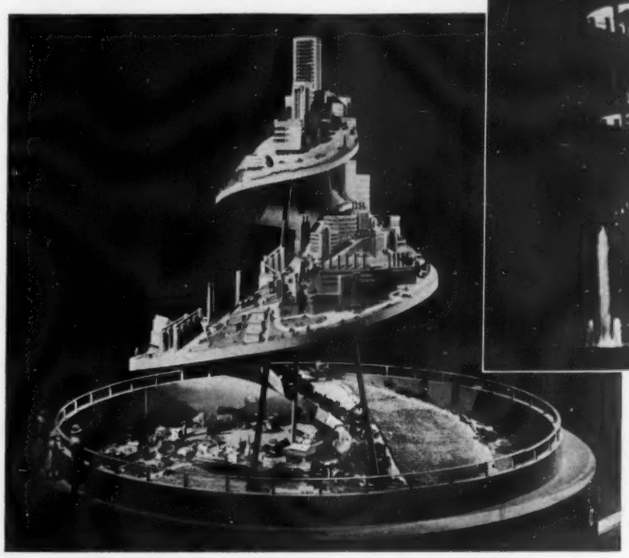
Reports of important Canadian ore discoveries have been received from time to time for many years by Lake Superior producers, who have spent large sums in futile investigations. Though the dominion authorities have done much to encourage explorations, even offering bounties, the fact remains no important shipments have been made, except from Newfoundland, since 1922.

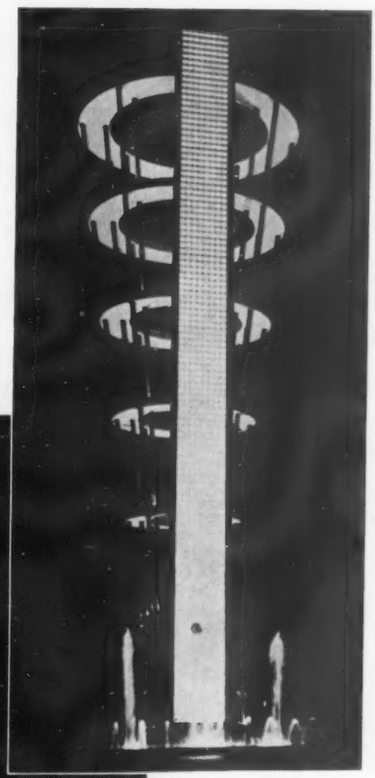
From Grain to Spirits on Spiral of Steel; And a Radiant, Singing Exclamation Point

■ Steel forms the backbone for many unusual displays being constructed for New York World's fair. Models of some illustrate design and general effect better than do partially completed frames.

Below is the exhibit for the distilling industry, structural design and spiral superstructure by Lamson Co., Syracuse, N. Y.; and, right, "singing light tower" in the form of an exclamation point Westinghouse Electric & Mfg. Co. is building as one of its own attractions.

The spiral is nearly 40 feet high, diminishing gradually to the apex from a base diameter of 40 feet. As this 7-ton weight of steel (with load, 10 tons) is revolved on a track, spectators will see farms, fields, mills, on up to final distilling.





The Westinghouse tower is 120 feet high, supported on a steel skeleton. Six concentric metal rings enclose tiny floodlights. Top ring is 42 feet across; bottom, 18 feet; separated by tubular insulating rods. Water in the fountains will spout up to 75 feet, rise and fall while lights change in color, harmonizing with symphonic music, at the impulse of electric controls.

Committee Co-ordinates Corrosion Information

■ A number of technical societies and other organizations have formed the American Co-ordinating Committee on Corrosion, to serve as a clearing agency for information on experience and work in progress on corrosion and corrosion prevention. The committee was organized in Philadelphia, Feb. 17.

Information is being sought respecting the names of individuals and organizations engaged in corrosion studies, nature of such studies, and a record of experience and publications.

Next meeting of the committee will be held in Atlantic City, N. J., in June during the annual meeting of the American Society for Testing Materials, at which information thus far compiled will be reviewed, permanent organization effected, and further work considered. C. L. Warwick, secretary-treasurer, American Society for Testing Materials, 260 South Broad street, Philadelphia, is serving as temporary chairman.

Rapid Gain, Economies In Light Weight Cars

■ Streamlined trains using light weight cars have been so profitable to railroads that they have paid for themselves in a comparatively short time, W. H. Mussey, research engineer, Pullman-Standard Car Mfg. Co., Chicago, told members of the Western Society of Engineers, meeting in Chicago, March 6.

"There are now in operation or on order for early delivery 80 light weight trains, comprising 682 cars," he said. "In addition there are a large number of light weight cars built for use either in solid trains or mixed with conventional cars, so the total of light weight passenger cars built or on order is 1339."

Light freight cars, he pointed out, do not appeal to the public so much as the passenger cars, but they have larger revenue producing capacity and show more possibilities for operating economies than do the old type cars.

■ Factory shipments of household washers in January totaled 109,909, an increase of 51.3 per cent over January, 1938, and 62.8 per cent greater than the 67,502 washers shipped in December, 1938.

Editorial

Broadcasting Facts on Mechanization

■ RECOGNITION in Washington that re-employment is the No. 1 problem confronting the nation brings hope some action will be forthcoming shortly to correct obstructions to re-employment. Many of these obstacles have been surveyed by industrialists contributing to STEEL'S Forum on Re-employment.

Perhaps the chief mental barrier is the belief that mechanization of industrial processes must be made the "whipping boy" for unemployment. This tenet is held in many high places in government, educational institutions, and elsewhere, with the result the gospel of hate against machines still is heard in many quarters, just as it was heard decades ago when cotton gins, the first textile weaving machines and like equipment were introduced.

Those who understand the function and application of mechanized equipment have tolerated this gospel of hatred, but it is only in recent years any concerted action has been initiated to demonstrate the fallibility of such doctrines.

Fruits of Mechanized Industry Shown in High Living Standards

The National Association of Manufacturers, William J. Cameron of the Ford Motor Co. and others have supported ably the case of the machine and its ability to make, not destroy, jobs. This week in Detroit, the American Society of Tool Engineers will hear the first report of a fact-finding committee which for six months has been examining the effect of mechanization on employment.

Consider a few elementary facts: The United States is the greatest machinery producing and machinery using country in the world; its workers receive an estimated annual nominal income of $1275, compared with $783 in Great Britain, $718 in Germany, $552 in Russia and $239 in Italy. By every conceivable index the American standard of living far outstrips that of any other nation. And it is a standard of living directly created by and evolving from mechanization.

Instances must be acknowledged where introduction of machinery has displaced numbers of workers, who then must seek employment in another field or fall back on the support of government agencies. However, at the same time, other workers are employed in building the machinery and production savings from its installation bring lower prices, an expanded market, increased production, and finally overall employment actually is increased.

Facts on "American Way" Should Be Emphasized To Counteract Errors

Thus the problem appears to narrow down to devising means to care for workmen temporarily displaced by introduction of machinery. The solution lies not in sabotaging the machine, but rather along lines of training displaced workers for new tasks and adjusting their viewpoints to new goals.

Perhaps it is futile to restate these truths to an audience generally entirely familiar with them. But if each of this audience should consider himself a deputized spokesman for the "American way" of civilization, it might be possible to carry the message into the minds of those who have failed to comprehend the significance of the industrial revolution, and who are easily misled by messiahs long on oratory and short on facts.

The BUSINESS TREND

Index Records Encouraging Gain; Outlook Improved

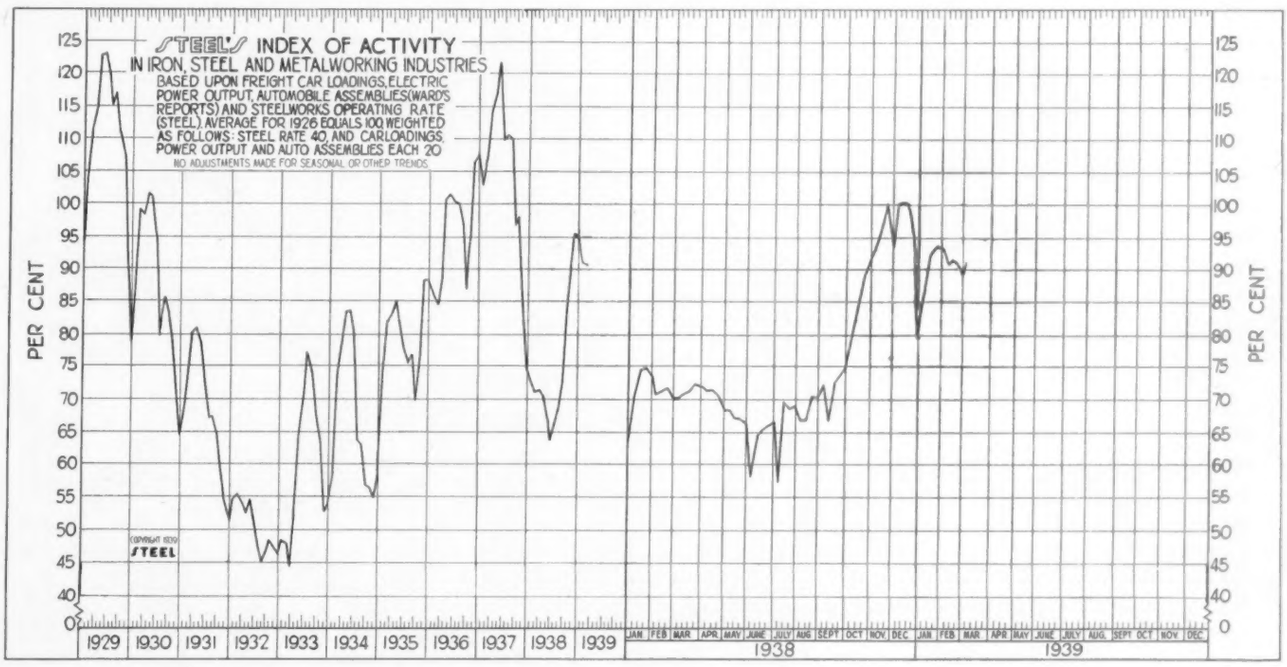
■ BUSINESS sentiment has improved somewhat on the basis of the apparent changing attitude of the government administration toward industry. It appears that the executive branch is intent upon supplementing spending with measures designed to reassure private industry. To what extent this indicated change of attitude toward business will induce private capital to perform its normal function remains to be seen.

The weeks immediately ahead are critical from two points of view. During this period the federal government will have a chance to prove in a tangible manner its change of policy toward business. Also developments during these weeks should decide whether the recovery in industrial activity which was initiated last summer will be resumed in a positive way.

Reflecting the normal seasonal trend of industrial activity in the iron, steel and metalworking industries during February, the average of STEEL'S index for the month receded slightly to 90.8. This compares with an average of 91.1 for January and of 71.1 for February last year.

Encouraging gains were recorded during the week ended March 4 in each of the four industrial indicators composing STEEL'S index. It now stands at 91.5, compared with 89.3 in the preceding week.

The first sign of a seasonal upward trend in automo-


STEEL'S INDEX OF ACTIVITY
IN IRON, STEEL AND METALWORKING INDUSTRIES
BASED UPON FREIGHT CAR LOADINGS, ELECTRIC POWER OUTPUT, AUTOMOBILE ASSEMBLIES (WARD'S REPORTS) AND STEELWORKS OPERATING RATE (STEEL). AVERAGE FOR 1926 EQUALS 100. WEIGHTED AS FOLLOWS: STEEL RATE 40, AND CARLOADINGS, POWER OUTPUT AND AUTO ASSEMBLIES EACH 20
NO ADJUSTMENTS MADE FOR SEASONAL OR OTHER TRENDS
COPYRIGHT 1939 STEEL
PER CENT
125 120 115 110 105 100 95 90 85 80 75 70 65 60 55 50 45 40 0
1929 1930 1931 1932 1933 1934 1935 1936 1937 1938 1939
JAN FEB MAR APR MAY JUNE JULY AUG SEPT OCT NOV DEC
1938
1939

STEEL'S index of activity gained 2.2 points to 91.5 per cent in the week ended March 4:

Week ending	1938	1937	1936	1935	1934	1933	1932	1931	1930	1929
Dec. 17	99.8	79.4	114.8	91.9	60.6	56.0	49.3	52.3	67.3	79.7
Dec. 24	94.8	69.5	93.3	77.3	64.4	58.0	46.9	46.8	52.3	64.9
Dec. 31	79.9	62.7	96.6	78.2	60.8	53.7	42.9	48.8	58.5	74.3
1939	**1938**	**1937**	**1936**	**1935**	**1934**	**1933**	**1932**	**1931**	**1930**	**1929**
Jan. 7	86.5	70.1	107.8	90.2	65.4	53.6	45.3	55.8	69.2	88.1	94.8
Jan. 14	91.9	74.4	106.7	89.3	73.8	58.1	48.6	56.2	72.1	91.8	104.2
Jan. 21	93.0	74.7	104.0	86.0	78.1	60.9	49.8	55.8	72.9	96.3	107.5
Jan. 28	92.9	73.8	99.6	86.5	79.5	62.3	50.8	56.2	72.9	97.4	109.8
Feb. 4	90.7	70.9	100.8	83.8	81.8	66.9	49.9	56.0	74.9	100.8	111.3
Feb. 11	92.1	71.2	101.9	85.9	82.7	70.7	48.7	55.5	75.4	100.9	111.7
Feb. 18	91.1	71.9	108.8	81.8	82.8	72.4	48.3	54.5	76.0	97.7	112.6
Feb. 25	89.3	70.3	112.8	83.4	80.5	75.5	46.0	55.1	75.8	99.7	109.2
Mar. 4	91.5	70.1	117.9	87.7	81.1	76.8	47.4	54.1	79.2	98.3	113.5

bile production developed during the week ended March 4. Assemblies increased 3405 units to 78,705 and remained well above the 54,440 units assembled in the comparable week a year ago. Some automotive producers are planning to advance their production rates for spring demand somewhat earlier than had been anticipated.

Steelmaking operations increased one point to 56 per cent in the week ended March 4. However, there are indications that the national steel rate will be fractionally lower during the week ended March 11. The anticipated spring upturn in steelworks operations is expected to take hold more positively during the latter part of this month.

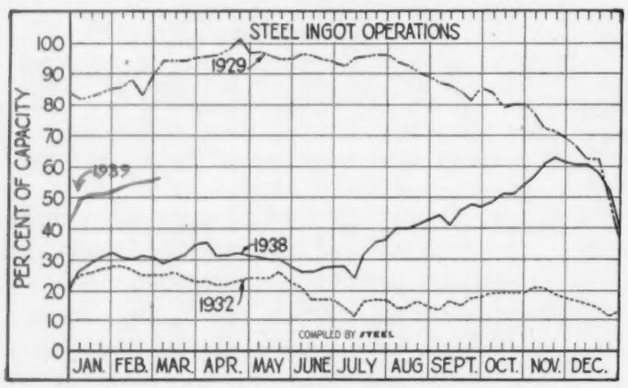
Revenue freight carloadings increased more than seasonally to 598,691 cars in the week ended March 4, while electric power consumption reversed the downward movement of the preceding four weeks to record an encouraging gain to 2,244,014,000 kilowatt-hours.

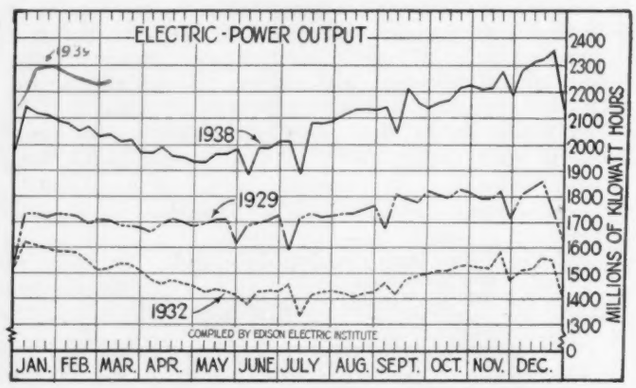
PRODUCTION INCREASE LESS THAN SEASONAL

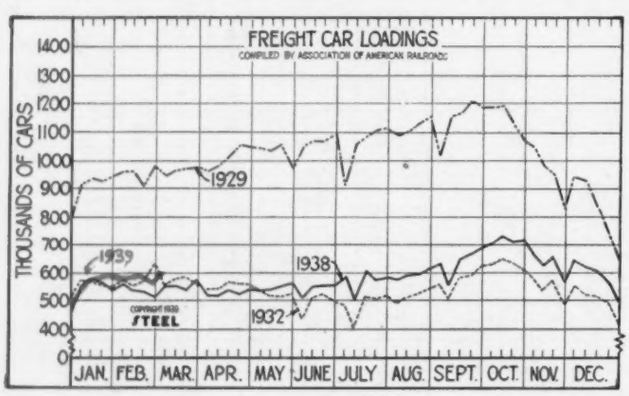
Industrial production increased less than seasonally in January, according to the Federal Reserve board's seasonally adjusted index. Reflecting this condition the index eased three points to 101. In January last year the index stood at 80. Volume of industrial production continued to record a less than seasonal advance during the first three weeks of February, which would indicate that the seasonally adjusted index receded to slightly lower levels last month. Distribution of commodities to consumers recorded the usual sharp decline from December to January, while factory employment and payrolls were off seasonally between the middle of December and the middle of January.

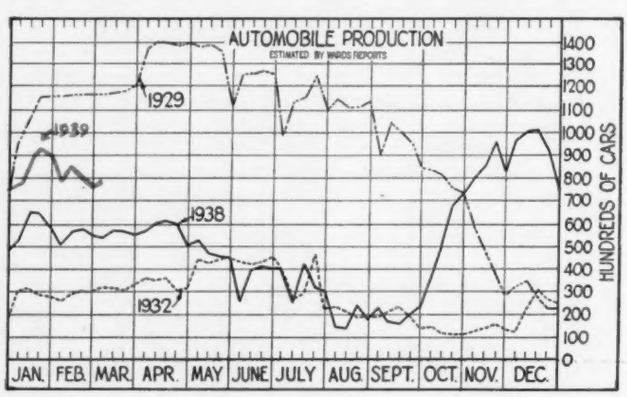
AVERAGE DAILY INGOT OUTPUT INCREASES

The daily average ingot production during February was 123,120 tons, according to the American Iron & Steel institute. This compares with 122,571 in January and 70,969 tons in February, 1938. Excluding November, 1938, the February daily average exceeded any month since October, 1937, of 130,497 tons. Due to the shorter month total ingot production during February of 2,954,883 tons was slightly lower than the 3,186,834 tons reported during January. Ingot production last month averaged 54.10 per cent, compared with 52.69 in January and 31.74 per cent in February, 1938. A further increase in the national steel rate should develop through March.



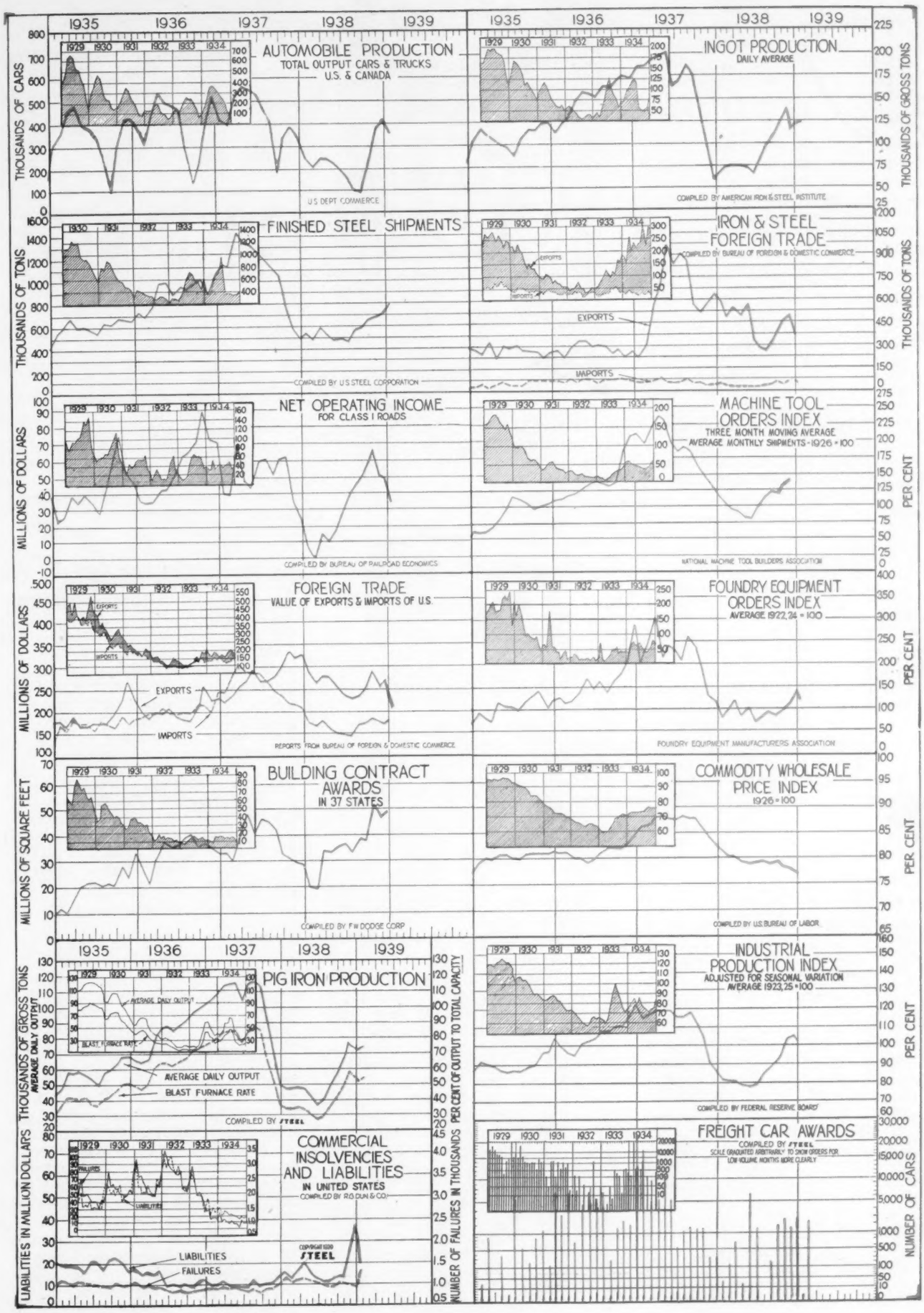




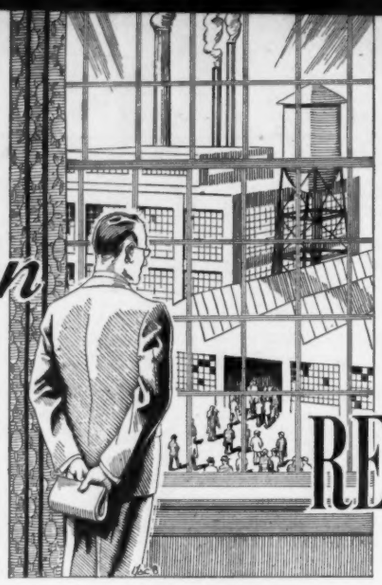


Week ending	Steelworks Operating Rate Per Cent 1938	1932	1929	Electric Power Output Million KWH 1938	1932	1929	Freight Car Loadings Thousands of Cars 1938	1932	1929	Weekly Auto Output 1938	1932	1929
Nov. 26	62.0	17.5	71.0	2,183	1,475	1,818	562	494	950	84,930	13,389	38,219
Dec. 3	61.0	16.0	69.5	2,285	1,510	1,718	649	547	837	97,795	12,398	28,079
Dec. 10	61.0	15.0	67.0	2,318	1,519	1,806	619	521	937	100,705	21,695	31,255
Dec. 17	58.0	14.0	63.5	2,332	1,563	1,841	606	517	923	102,902	30,589	33,293
Dec. 24	52.0	12.0	63.5	2,362	1,554	1,860	574	495	843	92,890	27,396	23,216
Dec. 31	40.0	13.0	38.5	2,120	1,415	1,638	500	407	638	75,215	25,598	23,967

	1939	1938	1932	1929	1939	1938	1932	1929	1939	1938	1932	1929	1939	1938	1932	1929
Jan. 7	51.5	26.0	25.0	84.0	2,169	2,139	1,619	1,542	531	552	573	799	76,685	54,084	30,755	75,000
Jan. 14	52.0	29.0	26.0	82.0	2,269	2,115	1,602	1,734	587	580	572	914	86,925	65,735	31,416	95,000
Jan. 21	51.5	30.5	27.0	83.0	2,289	2,108	1,598	1,737	590	570	562	932	90,205	65,418	29,365	105,000
Jan. 28	51.5	33.0	28.5	84.0	2,292	2,098	1,588	1,717	594	553	560	926	89,200	59,365	28,950	115,000
Feb. 4	53.0	31.0	28.5	85.0	2,287	2,082	1,588	1,728	577	564	575	947	79,410	51,443	27,110	116,000
Feb. 11	54.0	30.0	27.0	86.0	2,268	2,052	1,578	1,726	580	543	562	956	84,500	57,810	29,320	116,000
Feb. 18	55.0	31.0	25.0	88.0	2,249	2,059	1,545	1,718	580	536	572	958	79,860	59,100	30,410	116,500
Feb. 25	55.0	30.5	25.0	83.0	2,226	2,031	1,512	1,699	561	512	636	907	75,660	56,977	30,150	116,500
Mar. 4	56.0	29.5	25.0	89.5	2,244	2,036	1,519	1,707	599	553	560	977	78,705	54,440	31,390	116,500


AUTOMOBILE PRODUCTION
TOTAL OUTPUT CARS & TRUCKS
U.S. & CANADA
U.S. DEPT. COMMERCE
INGOT PRODUCTION
DAILY AVERAGE
COMPILED BY AMERICAN IRON & STEEL INSTITUTE
FINISHED STEEL SHIPMENTS
COMPILED BY U.S. STEEL CORPORATION
IRON & STEEL FOREIGN TRADE
COMPILED BY BUREAU OF FOREIGN & DOMESTIC COMMERCE
EXPORTS
IMPORTS
NET OPERATING INCOME
FOR CLASS I ROADS
COMPILED BY BUREAU OF RAILROAD ECONOMICS
MACHINE TOOL ORDERS INDEX
THREE MONTH MOVING AVERAGE
AVERAGE MONTHLY SHIPMENTS - 1926 = 100
NATIONAL MACHINE TOOL BUILDERS ASSOCIATION
FOREIGN TRADE
VALUE OF EXPORTS & IMPORTS OF U.S.
EXPORTS
IMPORTS
REPORTS FROM BUREAU OF FOREIGN & DOMESTIC COMMERCE
FOUNDRY EQUIPMENT ORDERS INDEX
AVERAGE 1922,24 = 100
FOUNDRY EQUIPMENT MANUFACTURERS ASSOCIATION
BUILDING CONTRACT AWARDS
IN 37 STATES
COMPILED BY F.W. DODGE CORP.
COMMODITY WHOLESALE PRICE INDEX
1926 = 100
COMPILED BY U.S. BUREAU OF LABOR
PIG IRON PRODUCTION
AVERAGE DAILY OUTPUT
BLAST FURNACE RATE
COMPILED BY STEEL
INDUSTRIAL PRODUCTION INDEX
ADJUSTED FOR SEASONAL VARIATION
AVERAGE 1923,25 = 100
COMPILED BY FEDERAL RESERVE BOARD
COMMERCIAL INSOLVENCIES AND LIABILITIES
IN UNITED STATES
COMPILED BY R.G. DUN & CO.
LIABILITIES
FAILURES
COPYRIGHT 1939 STEEL
FREIGHT CAR AWARDS
COMPILED BY STEEL
SCALE GRADUATED ARBITRARILY TO SHOW ORDERS FOR LOW VOLUME MONTHS MORE CLEARLY
THOUSANDS OF CARS
THOUSANDS OF TONS
MILLIONS OF DOLLARS
MILLIONS OF SQUARE FEET
THOUSANDS OF GROSS TONS
AVERAGE DAILY OUTPUT
LIABILITIES IN MILLION DOLLARS
NUMBER OF FAILURES IN THOUSANDS
PER CENT OF OUTPUT TO TOTAL CAPACITY
PER CENT
NUMBER OF CARS

Forum on RE-EMPLOYMENT



■ TECHNOLOGICAL unemployment has not been touched upon thus far in the Forum. This week however the subject is dealt with effectively and at a most fitting time by a man who is singularly well equipped to discuss it.

The time for this discussion is most fitting because there is in progress this week in Detroit the convention and exhibit of the American Society of Tool Engineers. These men and their products constitute the very foundation of what the technocrats have so strongly condemned—the interchangeable system of mass production.

Louis Poock, contributor of this week's article, is general manager of the Cimatool Co., Dayton, O., well-known maker of tools, dies, jigs, fixtures, gages and related equipment used in production plants. He is typical of the new order of things in the tool industry—being college trained, comparatively young and definitely progressive as an executive.

Mr. Poock punctures the idea that machines eliminate men, by showing conclusively how modern tooling makes it possible for untold thousands of the unskilled and semi-skilled to be employed on work which—without modern equipment—they would be wholly incapable of doing.

—*The Editors*

■ ECONOMIC and sociological phases of the unemployment problem have been discussed at great length in these columns. While I have very definite views on these subjects, I hardly believe an expression of them would add greatly to what has been said. The technological aspect of the unemployment problem, however, falls more closely within the scope of my experience, and I feel better able to discuss it.

Advances in technology have been blamed for causing widespread unemployment. They have also been praised for raising the living standards of our people as a whole and for actually creating much new employment. Each side in this discussion is very positive and very loquacious. To me it seems perfectly obvious that were it not for technological progress, many of our present industries which employ thousands of workers never would have come into existence.

Some sociologists are prone to cite the Middle Ages as a sort of golden period during which unemployment did not exist. As a matter of fact, very few of those employed at that time had enough to eat. They enjoyed none of the luxuries we know—luxuries of today that become tomorrow's necessities.

If we could eliminate all the technological progress of the last 25 years, that theoretically would reduce the number of unemployed. Few of us today, however, would be willing to accept the kind of work which would be assigned to us on that basis. American workers want something more than just jobs. They want limited hours and sufficient wages to live comfortably. Without technological progress such a prescription could not be filled. We find in some of the older countries of Europe and Asia a very much smaller percentage of unemployed than we find here, but in every case living conditions and working conditions are far below American standards.

Much has been said about those of "rusty skill" or no skill at all in the ranks of the unemployed. It seems to be the general opinion that many of these are not, and never will be, re-employable—that the best that can be done with them is to put them permanently on the dole. It is said that they cannot keep pace with present industry—that they have lost the mental attitude which makes it possible for them to be efficient workers, and that this is the result of "part-time" or "made jobs" (governmental or otherwise) having destroyed their morale permanently.

Naturally if a man refuses to work there is little that can be done for him. If any large percentage of the estimated ten million unemployed have become afflicted with this mental complex, the problem is extremely difficult and may not be capable of solution. At present we have no way of telling just how many of the unemployed have an impossible mental attitude or how much a progressive stiffening of "made work" standards might accomplish toward "snapping them out of it." Certainly there can be no harm in inaugurating a stiffening process. If a man felt that he had to work harder for less money on such operations, it would seem that there would be considerably less chance of his morale softening. Possibly more men would respond to such a program than some sociologists are willing to concede.

This does not call for a policy of inhuman harshness. It simply means making relief jobs less inviting to that limited number—ever present in all walks of life—who always abuse privileges of every

kind. Supervised idleness has never helped a man to retain his self-respect or to keep him employable.

Where the difficulty is one of "rusty skill" or of lack of skill, and not mental attitude, the much-abused technological program becomes an effective remedy. While industry has been advancing both in its methods and standards, it likewise has been advancing in the quality and effectiveness of its tools. There are relatively few men living today who could turn out acceptable work if they had to use a lathe of 60 years ago. It is doubtful if modern tolerances could possibly be met when using machinery of that vintage. Certainly the strain on the skill of the machinist would be out of all proportion to the value of his output if he had to use such obsolete tools. It requires far less training and much less skill for a man to turn out good work with modern tools. Most men become proficient with modern equipment in a comparative short time, and with minimum supervision. This is true not only of the lathe, but of practically all high production machines, dies, gages, and tools which so inflame the technocrats.

The field of inspection has rapidly grown in extent and importance in the last ten years. This has been due largely to the increase in interchangeable manufacture and mass production. If all parts today had to be measured with the ordinary micrometer caliper, the unskilled and "rusty" would find no opportunity for employment in inspection.

It requires time and considerable practice for an untrained man to develop the skill necessary for accurate use of a micrometer for rapid inspection of work under precision production conditions. In fact, relatively few men ever do learn to caliper to "tenths." On the other hand, practically anyone can use "go and no go" gages with little or no training. Other measuring instruments and gaging machines are also available which check dimensions to fractions of a tenth and can be handled by men or women with very little training and with relatively low degree of skill.

Die Development Significant

Use of sheet or pressed metal parts has tremendously increased lately because of developments in the making and application of dies. Few men today would welcome the opportunity of hammering out over a form the metal front ends used on the modern automobile. Few could do it, and none could at the high speed and low cost demanded by the automobile industry. The ever rising tide of newly designed, larger, more complex dies, fixtures, etc., has likewise made possible the mass production at low cost of a constantly increasing number of widely used products other than automobiles, in whose production great numbers of unskilled and semi-skilled people are finding employment.

The gagemakers, machinists, toolmakers, and diemakers employed in organizations such as ours must on the other hand be more than ever carefully trained and must have a very high degree of skill. While there is a limited number of such men, it becomes obvious from the foregoing that the type of tools and

Louis Poock
General Manager
Cimatool Co., Dayton, O.

equipment they produce is the direct means of employment on production and inspection work for thousands of unskilled and semiskilled workers throughout the great mass production industries.

Such mass production is the means whereby the selling price of manufactured goods can be consistently and economically reduced, while the quality and adaptability of these goods are at the same time increased.

If quality remains the same, or is improved, while the selling price is reduced, the potential market for the goods is broadened. More people can buy—more people do buy. Then as consumption increases, production and employment rise in unison.

It is sometimes contended that progress of this kind, in which the burden of ingenuity and skill is thrown on a few selected skilled workers, weakens the general demand for skilled men and injures the status of the worker generally. If every mechanical worker received the training necessary to make him a skilled machinist, toolmaker, gagemaker or diemaker, and had the innate ability to become one of these specialists, that might be true. But in this country we have never made even a gesture toward such universal training.

With any reasonable return of normal business, all the highly skilled labor available at the present time will quickly be absorbed, and the problem will be one of scarcity rather than of abundance. Even granting that the employment of our skilled labor still is rather spotty during certain periods of the year, the more pressing and immediate employment problem certainly is that of the unskilled and semi-skilled group and those who are "rusty."

Physical Strain Reduced

Another favorite idea in some purely academic minds is that modern industry refuses all but those of the highest physical stamina—that a majority of the unemployed are not physically capable of meeting present-day industrial standards. If that were true, the problem would seem to be in the realm of medicine and public health, rather than of industry alone. The automobile industry is represented as placing extreme physical strain on its workers. An automobile plant is pictured as a place where only young, trained athletes can work consistently—where the pace is as breathless as a first round with Joe Louis.

This obviously is untrue, as any visitor will realize following a trip through an automotive plant. As in all industries, there may be some individual jobs which do require exceptional physical stamina and "brute strength," but due to the technological advances already discussed, such jobs are relatively few. Production engineers and plant management know only too well that "human power" costs far too much per kilowatt to permit its use to any extent. There are, it is true, many jobs in the automotive industry which require speed, but it is an easy, efficient speed developed through constant practice—not just a breathless rush.

To sum up the situation, I am convinced that with a return of real prosperity employment will be available for practically all those now unemployed. Recent advances in tools, machines and methods discount physical handicaps as well as lack of skill in connection with mass production of interchangeable parts and products. In the meantime the handicap due to "mental attitude" can be reduced materially by stiffening the requirements and standards of all "made work"—both private and governmental. If the national administration is sincere in its expressed desire for business recovery, that in itself constitutes an invaluable step toward this much needed revival.

Roll-Grinding *Coolants*

This, the second of Mr. Wills' articles on roll grinding, is devoted to what constitutes a good coolant and to a detailed discussion of how the common classes of materials now in use for such service meet these requirements

By H. J. WILLS
The Carborundum Co.
Niagara Falls, N. Y.

■ WHILE OF great importance, the sole purpose of a coolant is not to keep temperatures down. There are other factors involved as well. Temperature of rolls during grinding must be kept uniform and preferably at about room temperature, as localized heating may cause surface burns, and variations in temperatures may cause serious out-of-roundness and other dimensional inaccuracies. Also, a heated roll may expand radially toward the wheel, or it may expand lengthwise and be distorted by the resistance offered by the centers. Thus plenty of the right coolant must be used throughout grinding.

But coolants have several other functions. Coolants protect the roll surface by carrying away dust chips of material and particles of abrasive which result from grinding. Also they prevent dust in the air from harming the roll surface. A coolant for steel mill roll grinding should absorb and dissipate large amounts of heat rapidly (have high specific heat); reach the zone of grinding action (the right viscosity); have low surface tension so chips and dirt can settle out of the coolant readily; have adequate detergent properties to keep the wheel face sufficiently free from gumminess and cuttings. A clean wheel penetrates the work more readily, thus increasing spede of cut.

It is sometimes desirable to use the same wheel for both roughing and finishing cycles. Rarely can a coolant be found with exactly the right qualities to give the best results with such double purpose wheels. Usually it is necessary to sacrifice to some extent either the finish or the rate of stock removal.

A coolant used solely on finishing operations should have less detergent qualities to permit the wheel face to glaze. A glazed wheel face reduces grain penetration, changing the nature of the surface and producing a better finish.

Should Prevent Rust

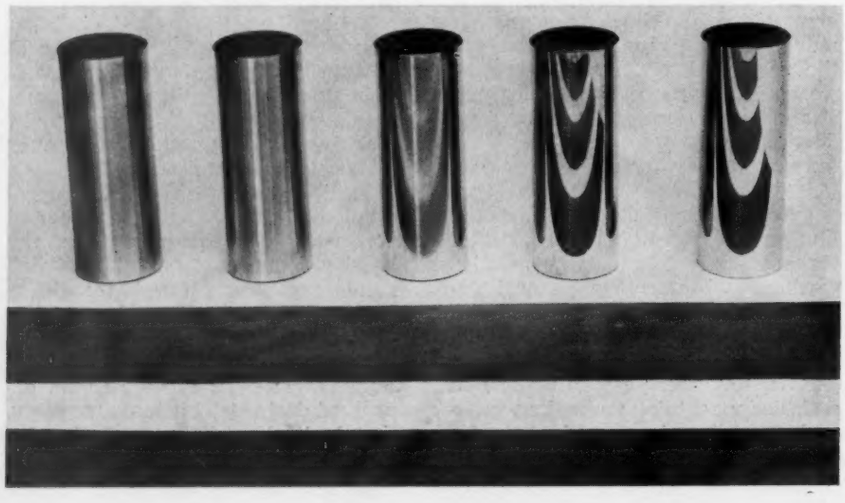
Coolants should not rust the work or the machine. It is an advantage if the coolant coats the work with a thin rust preventing film.

If the coolant can be made transparent, the point of contact between wheel and work can be seen even when using a large amount. Coolants should not affect the wheel bond which may happen to wheels of resinoid, shellac or rubber bonds.

Coolants which circulate through settling tanks and filters may transmit infection from workman to workman. Thus coolants should contain an effective antiseptic.

Coolants should not deposit foreign materials such as sludge or gum on the wheel and they should be non-inflammable.

The most satisfactory coolants do



Five steps in generating a smooth surface. Here surface quality is indicated by clarity of reflection which improves with each step to the right

not foam and if foam does form it should break down quickly. It is desirable that compound used to make coolant should mix readily with cool water. When water must be heated or where prolonged agitation is required, the cost will be greater than necessary.

Coolants best suited for roll grinding are plain water, solutions of soda in water, soluble oils, paste or grease compounds, and soaps. These have varying advantages.

Water is cheap, absorbs heat rapidly because of its high specific heat, and is quite transparent. On the other hand, it does not readily precipitate foreign materials which it picks up and it has a strong tendency to rust the work and the machine. Also, even when filtered, some city water contains grit.

Soluble oils may be of the soda or potash base type, vegetable or animal seal oils, or petroleum base cut with no resin or free fat oils. These give a reasonably high finish, are readily soluble in water and protect against rust. Disadvantages are interference with cut, low heat absorption, high work pressures, tendency to clog filters and leave gummy deposits on wheel and machine, tendency to disintegrate rubber bonds and to thicken when cold. With few exceptions these coolants are insufficiently transparent.

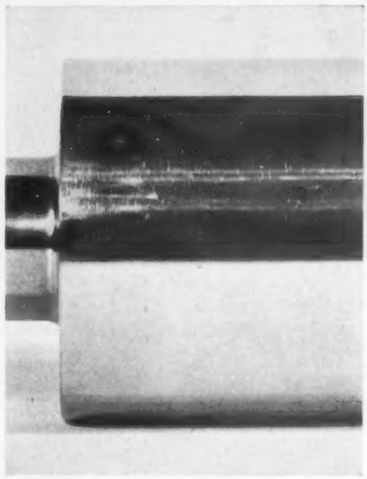
Paste or grease compounds have all the advantages and disadvantages of soluble oils. They have the additional disadvantage that in order to make a good emulsion, considerable mixing with hot water is required.

Soda solutions have considerable rust preventing qualities, good transparency, keep the wheel face clean, increase the cutting speed, precipitate dirt and chips readily. Disadvantages are possibility of damage to paint on the machine, undesirable effects on organic bonds, danger to operator's eyes.

Soap solutions have a reasonably good detergent action on the wheel face and give high finishes with only slight sacrifice of speed of cut. However, they tend to carry particles back to the work and make the work slimy.

Mineral seal oils, kerosene and the like have few uses in roll grinding.

Clean water is not necessarily safe to use as a coolant in conjunction with oils or pastes. Some water contains so much permanent hardness that insoluble soaps may be formed with oils or pastes dissolved in it. This produces a deposit on the work surface and in wheel pores, seriously interfering with



This illustrates heavy traverse marks from a too rapid traverse rate and a sharp wheel edge

the wheel cut. Also it may hold chips which will scratch the work. Have the water analyzed to determine what treatment it may need or what compound is most satisfactory to use with it.

In precision grinding, a good filter installed in the coolant circulating system is essential. Chips or dirt allowed to remain in the system are certain to cause damage and may necessitate more frequent redressing with consequent excessive abrasive costs. With wheels as coarse as 60 grit, the number of passes per dressing has been more than doubled solely as a result of installing a filter for the coolant.

Do not be overly "economical" in the use of coolant. Supply a large amount constantly at the point of contact of wheel and work to keep a uniform temperature at all times. Volume is not enough. Adequate pressure is essential to insure forcing the coolant to the point of contact.

It is incorrect practice for the operator to shut off the coolant supply momentarily to see the contact between wheel and work. It is so important to have coolant flowing freely all the time wheel and work are in contact that a change should be made to a coolant of greater transparency if necessary.

It is sometimes difficult to wet the surface of wheels running at speeds higher than 5000 surface feet per minute because they are surrounded with an atmospheric layer of such high velocity that coolant at ordinary pressures does not penetrate to the wheel. The remedy is to increase coolant pressure by providing a nozzle which will supply a more concentrated stream at the point of contact.

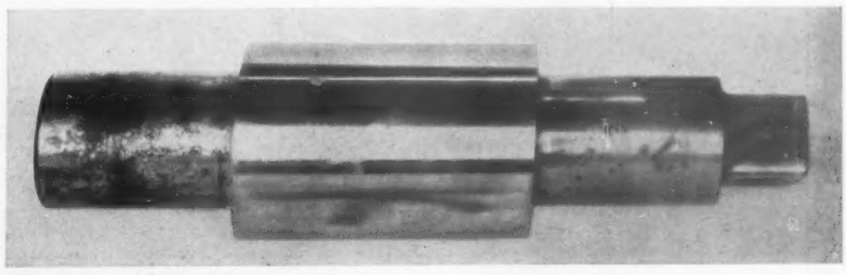
Two Views on Ultra-Finish

There are two schools of thought on ultra-finish grinding of steel mill rolls. One recommends use of a fine, reasonable soft shell, permitting it to travel for a long time with a light contact, allowing the wheel face to glaze. Relatively no stock is removed and the work is subject to practically a burnishing operation. This "spark out" procedure is of particular advantage when the operator has other duties to perform and cannot give his undivided attention to the operation.

The other and more modern recommendation is use of a wheel which gives a definite cut through two separate cycles of operation. In the cutting cycle, the wheel face is kept clean both with a detergent coolant and by using a high rate of traverse, promoting dimensional accuracy and uniformity of surface. When the work is reduced to the right dimension, or the previous grinding marks removed, the second or polishing cycle is begun. Without dressing the wheel, the traverse rate is reduced to the absolute minimum and the wheel allowed to glaze.

If glazing does not occur quickly —in two passes at the most—the glaze may be secured by filling a loosely woven bag (cheese cloth) with a suitable paste compound and allowing the bag to drag on the work opposite the wheel. Flow of coolant is reduced so the dissolved paste is not dissipated before it reaches the wheel. This allows a more concentrated solution of a glazing medium to be used without changing coolant concentration.

If the wheel builds up a glaze and then suddenly clears itself, it is an indication that the detergent quality of the coolant is too great. So reduce the amount of detergent used in the coolant.



Scratches on the surface of this roll were caused by dirty coolant

Frame Structures

Design of arc-welded steel frame with treated wood parts eliminates need for temporary bracing during erection. Elimination of shrinkage permits use of precut plaster board, giving better walls and cutting time required by 20 per cent

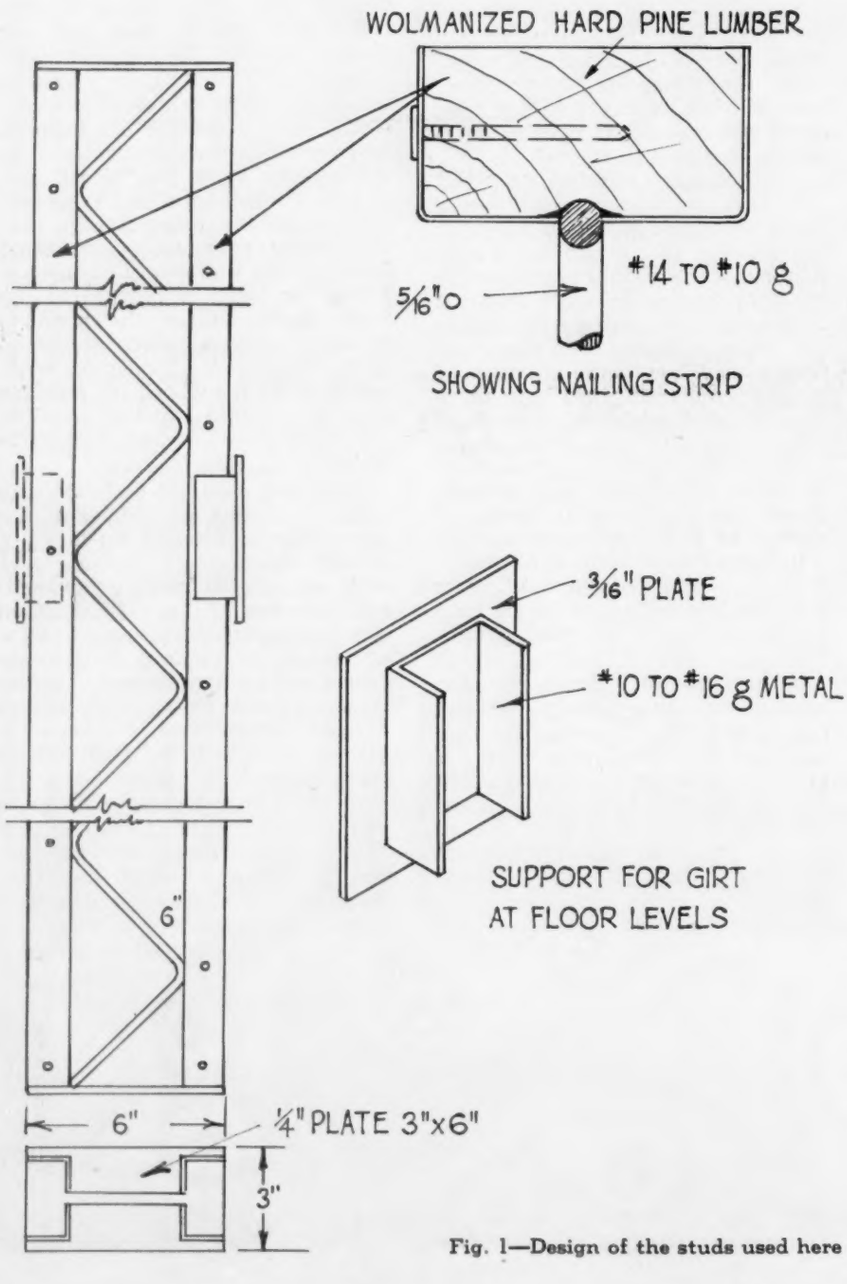


Fig. 1—Design of the studs used here

By S. FRASER McINTOSH
Vice President
Insulated Steelbilt Structures Inc.
Amsterdam, N. Y.

■ DESIRABLE features made possible by the use of arc welding in the construction of single and multiple swellings under the system described here are: Nonshrinking structural members, elimination of plaster cracks, ease of fastening materials to frame, simplicity of design, rot and verminproof construction, use of standard building materials, simplified installation of heating and plumbing equipment, easy installation of electric wiring, low depreciation, rapid construction, its adaptability to any style architecture, maximum shop work, minimum field work, simplified shop detailing, low shop equipment cost.

The steel frame used here consists of three major units—the stud, the beam and the girt. Figs. 1, 2, 3 and 4 will show details.

Arc welding was decided upon for shop fabrication after experimenting with other methods of welding and taking into consideration the cost of equipment and shop time. Some operations could only be done by arc welding.

By using the Module system in designing the buildings, shop detailing was eliminated almost completely as most of the required shop information is covered by listing of parts by numbers in combination, such as B —12—8—16. This arrangement of numbers is the method of ordering 12 standard beams, 8 inches deep for a 16-foot room. The order for 2

This is an abstract from the paper which received the first award, $712.28, in the Structural Houses classification of the $200,000 Award Program sponsored by the James F. Lincoln Arc Welding Foundation, Cleveland.

Marching along together

STEEL.. STYLE.... COMFORT

Except for *steel*, the shoes we wear would be little better than medieval sandals, with their shapeless ugliness and destruction of foot health.

The arch which assures comfort, safety, lasting appearance, is made by a steel brace concealed in the leather. Heels are possible because of steel nails. Steel eyelets keep the laces from tearing the leather. The laces thread easily because of steel tips--to say nothing of the steel machinery vital to processing the leather and making the shoes themselves.

It takes almost 100 pieces of steel to make most pairs of modern shoes, and they are only a small fraction of the thousands and thousands of pieces of steel you use every day to make life comfortable and safe. Steel makes possible your electric light, home heating plant, canned food delicacies, automobile, office building and factory, railroad--in fact steel makes possible the standard of living on which civilization depends.

For almost every one of this multitude of uses a special steel is required, and Youngstown maintains a great laboratory and special staffs of research and field experts to find exactly the right steel for every modern use.

QUALITY TRADE MARK YOUNGSTOWN SERVICE

Sheets - Plates - Pipe and Tubular Products - Conduit - Tin Plate - Bars Rods - Wire - Nails - Unions - Tie Plates and Spikes

YOUNGSTOWN

THE YOUNGSTOWN SHEET AND TUBE COMPANY
Manufacturers of Carbon and Alloy Steels
General Offices
YOUNGSTOWN, OHIO

28-11B

COMPARATIVE COSTS

Cost of old type wall, no fireproofing features

	Sq. ft.
Face brick	$0.42
Backup brick	.58
Waterproof coating	.03
Wooden wall furring	.03
Wire lath and plaster	.13
Per square foot,	$1.19

Cost of new type wall, 3 hour rating, fireproof

	Sq. ft.
Face brick	$0.42
Waterproofing	.02
Wall ties, special	.03
Insulation, fireproof	.12
Steel	.16
Lath and plaster	.13
Reflective insulation	.03
Per square foot,	$0.91

Cost of old type floor construction, wood

	Sq. ft.
Finish flooring	$0.16
Subfloor	.06
Wood floor beams	.08
Bridging	.02
Furring	.03
Wire lath and plaster	.13
Per square foot,	$0.48

Cost of new type floor, four hour rating

	Sq. ft.
Finish flooring	$0.16
Subfloor	.06
Fireproofing	.14
Steel	.15
Wire lath and plaster	.13
Per square foot,	$0.64

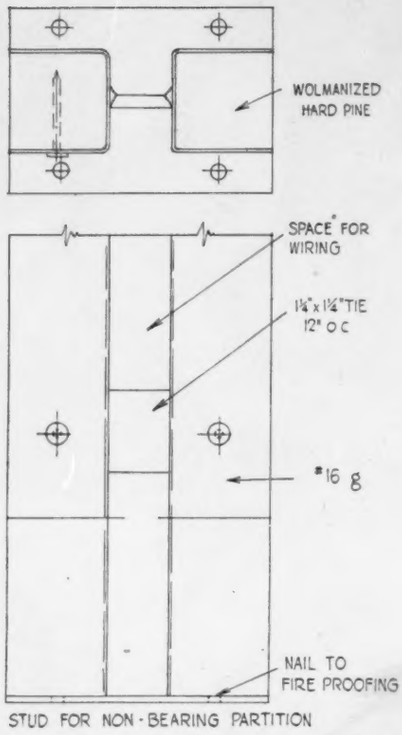


Fig. 2—Construction of the light stud

standard girts, 8 inches deep, for a 14-foot room similarly is G—2—8—14. Likewise SS—40—6—9—9—9′—6″ was the order for 40 single studs, 6-inch, standard for a building with a first story height of 9 feet, second story 9 feet, third story 9½ feet. If this last order had read DS instead of SS, it would have called for interior studs with double beam supports.

Window and door sills and headers are also standard and ordered by listing. Steel ordered from the shop by listing as shown above covers 90 per cent of the required steel for the building.

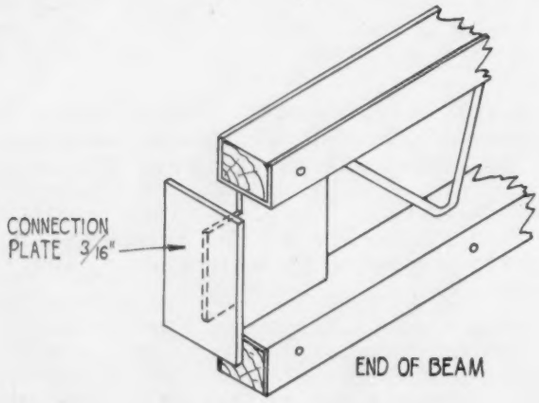
Typical data on a house built under this system of design is: Cubical contents, 45,000 cubic feet; steel frame, 15 tons; field welding, 140 hours; welding labor, $2.50 per hour. A second house had a cubical content of 30,000 cubic feet; steel frame, 10 tons; field welding, 120 hours; welding labor, $2 per hour.

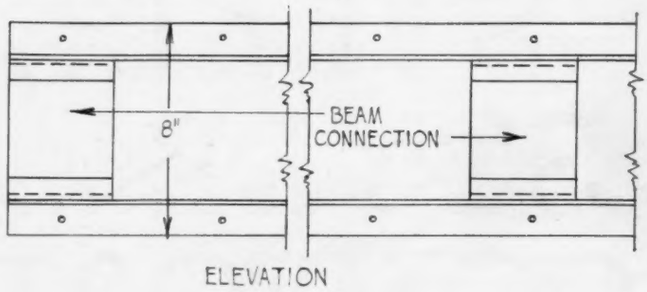
Both houses cost 40 cents a cubic foot. The amount of steel in each house was one ton to each 3000 cubic feet. Cost of steel in each house complete, including erection, shop and field painting, and overhead was about $190 per ton. The excess cost over prices received for a wooden frame building was less than 10 per cent of the cost of the completed building.

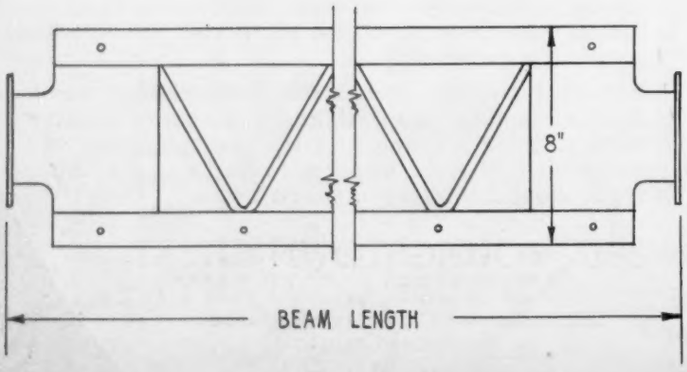
No cost comparison between various steel frames can be made without considering what has to be done after the steel is erected to take care of the enclosing materials and other things such as installation of door bucks, grounds for plastering, fas-

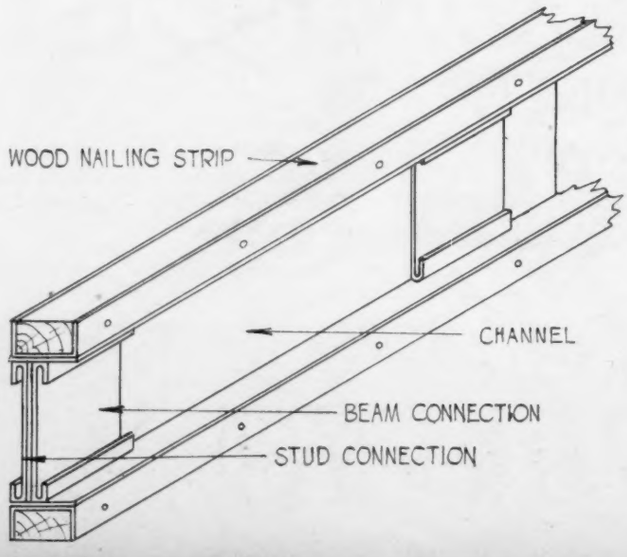
(Please turn to Page 77)

Fig. 3. (Left)—This shows the beam construction employed. Fig. 4. (Right)—Girts are constructed as shown here





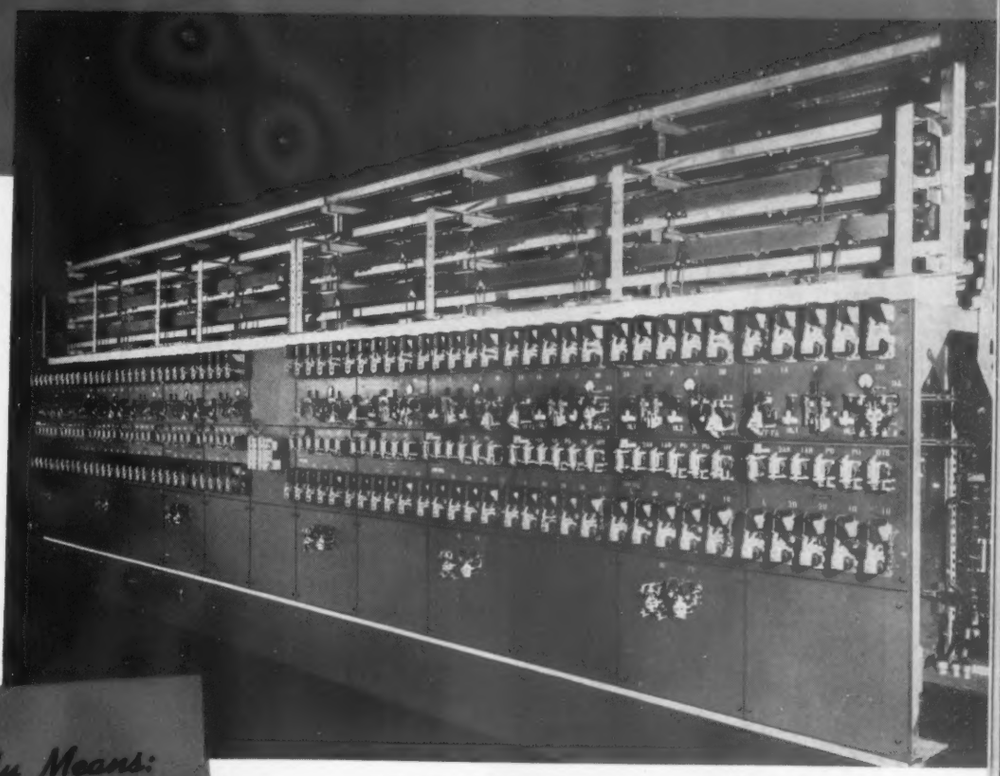




COST OF INSTALLING CONTROL CUT 25%

G-E Factory-assembled Control Saves Time and Money

It's COMPLETELY Assembled and Tested at the Factory



G-E factory-assembled control for auxiliary drives installed in a hot-strip mill in the Midwest

Complete Factory Assembly Means:

1. Group of panels mounted on a framework is installed as a unit
2. Resistors are mounted on same framework, each being wired to its corresponding panel. There are no resistor boxes, to sort, stack, and connect
3. Power bus is supplied with each panel group
4. Each panel is connected to power bus. Only one power feeder must be connected to power bus
5. Terminals are conveniently located at each panel for quick connection to outgoing motor and control leads
6. Fewer shipping crates to handle

A LARGE STEEL COMPANY reports that by installing G-E factory-assembled control, it saved 25% on *total* control installation expense.

Many other steel companies have had similar experiences. They've saved both time and expense by putting G-E factory-assembled control into their mills. And here's the reason:

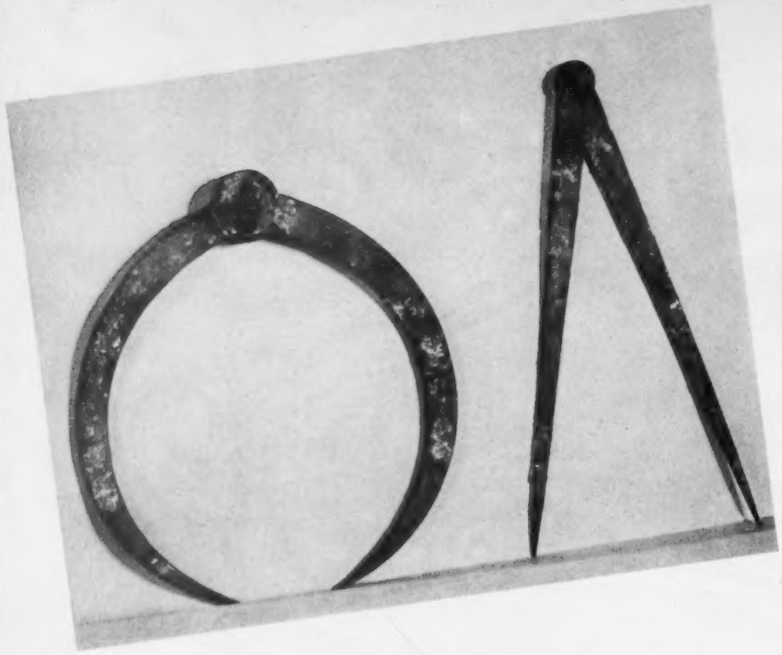
When shipped to you, control panels, main buses, and resistors have already been assembled on rigid, self-supporting framework, wired, and tested. All you have to do is to set the units on the floor and connect the power supply and leads to the terminals.

Consider this: If you're building a new mill, this G-E control will save time at a crucial moment because it will usually be the last equipment to be installed before the starting of operations. If you're modernizing an old mill, you'll shorten the change-over period and lessen the time the mill must be idle.

Our nearest representative will be glad to discuss your electrical requirements and space conditions with you and help you determine exactly how they should be met. General Electric, Schenectady, N. Y.

GENERAL ELECTRIC

080-171



Tool

By GUY HUBBARD
Machine Tool Editor

■ A LARGE and vitally important part of the metalworking industry in America is now concerned with interchangeable manufacture of products which, regardless of their ingenuity of design, would be practically worthless were they not built to limits of accuracy immeasurably beyond capabilities of the steel rules and calipers of 50 years ago, and far beyond even those of ordinary micrometers 30 years ago.

For example, an automobile, an electric refrigerator, or an aircraft engine of today's design—but built to the ordinary commercial limits of 1909—not only would be extremely noisy, but would very soon shake itself to pieces. As a matter of fact I question whether such mechanisms would operate at all at the speeds at which they now are regularly called upon to operate.

Industries manufacturing these and a great many other mechanical products comparable in quality, are today (in spite of the extremely close limits demanded in their work) among the largest employers and potential employers of the relatively unskilled or semiskilled labor which constitutes the largest part of the employable population of the United States. There is no reason to believe that this state of affairs will change very materially for a long time to come.

There is good reason to believe, however, that manufacturing limits are going to keep right on "tightening," and that high accuracy is going to be demanded in many branches of industry where heretofore it has not been considered of any great importance. As the technique of interchangeable manufacturing is refined and as applications of this system spread, the prices of products affected will be reduced. Thereupon more people can and will buy them, and through this increasing demand there will be created more employment in connection with manufacture and distribution.

It is not too much to say that the perfecting of this desirable economic cycle hinges to a large degree upon the ingenuity and skill of the few thousand tool engineers and tool and diemakers who are thinly scattered throughout the American industrial structure. The tools, dies, jigs, fixture, gages and certain types of special machinery designed and built by them represent the means by which their highly specialized ability and skill can be spread effectively and quickly over millions of unskilled and semiskilled workers who must be depended upon for quantity production.

These unskilled and semiskilled workers in turn represent a tremendous market for the manufactured products — assuming that prices are brought within their reach, and that they have the jobs that yield the money which will enable them to purchase these products.

Suppose we consider a typical example. An executive with plenty of energy, constructive industrial imagination and selling ability, builds and equips a modern tool plant in which he gathers together an able group of tool engineers and tool and diemakers.

Then he goes out and sells the services of his organization and shop to outside manufacturers who do not have tool designing and toolmaking facilities adequate to meet today's and tomorrow's demands for close limits and low-cost manufacture. If they are not aware that such is their condition, the tool executive makes them aware of it. That is a part of his job as an effective salesman.

Suppose that through such efforts he lands the job of retooling an electric refrigerator plant and that he puts 50 of his skilled men to work on this project. Suppose that as a result a better product can be made to sell for $150 that was previously sold for $200. It is entirely within the bounds of reason that twice as many customers will be found for this better $150 model than would have been found for the $200 model.

It is not by any means outside the realm of probability that the refrigerator manufacturer will soon find himself employing 5000 people instead of 2500 at the same time making more money than he otherwise would have made. In that event the efforts of one active executive and 50 men in the tool industry will have been largely responsible for 2500 people having good jobs, who might otherwise have been public charges. This imaginary picture is painted on the basis of personal knowledge of similar cases in which the facts and figures are even more impressive.

No time could be more propitious to point out the moral of such a story than when the tool industry of America—represented by the Ameri-

Engineering

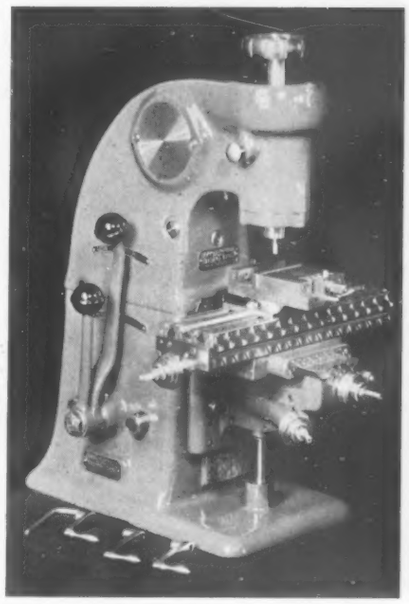
Is Basis for American Manufacturing System

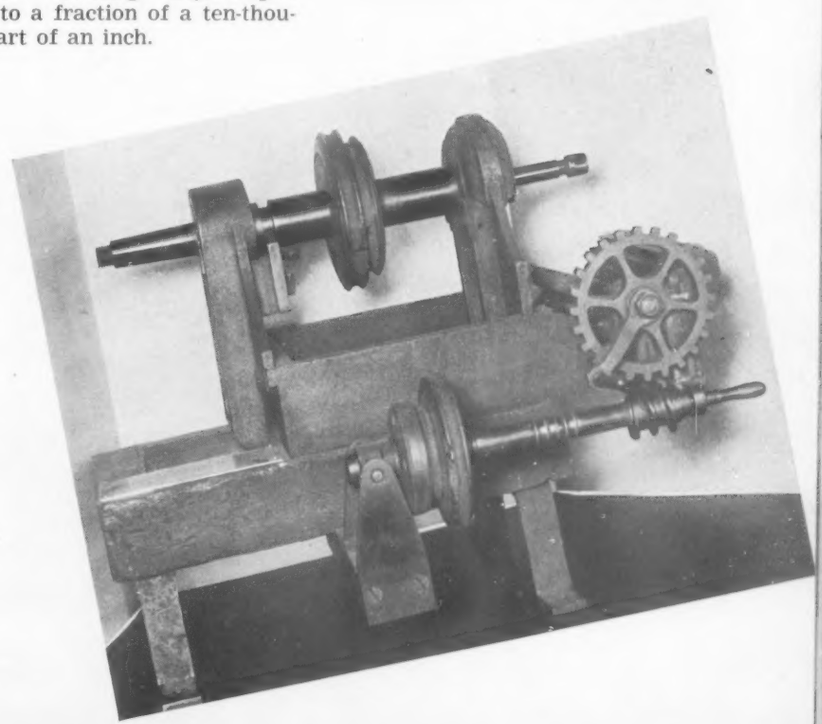
can Society of Tool Engineers — is holding its annual convention and exhibition at Detroit. If American industry in general will "tool itself up"—or "retool itself"—in line with the advanced practices and equipment made available by the tool engineering profession and the toolmaking industry, there is bound to be widespread improvement in quality, and equally widespread lowering of cost, of an extraordinarily wide variety of manufactured products. This certainly represents definite steps toward general prosperity.

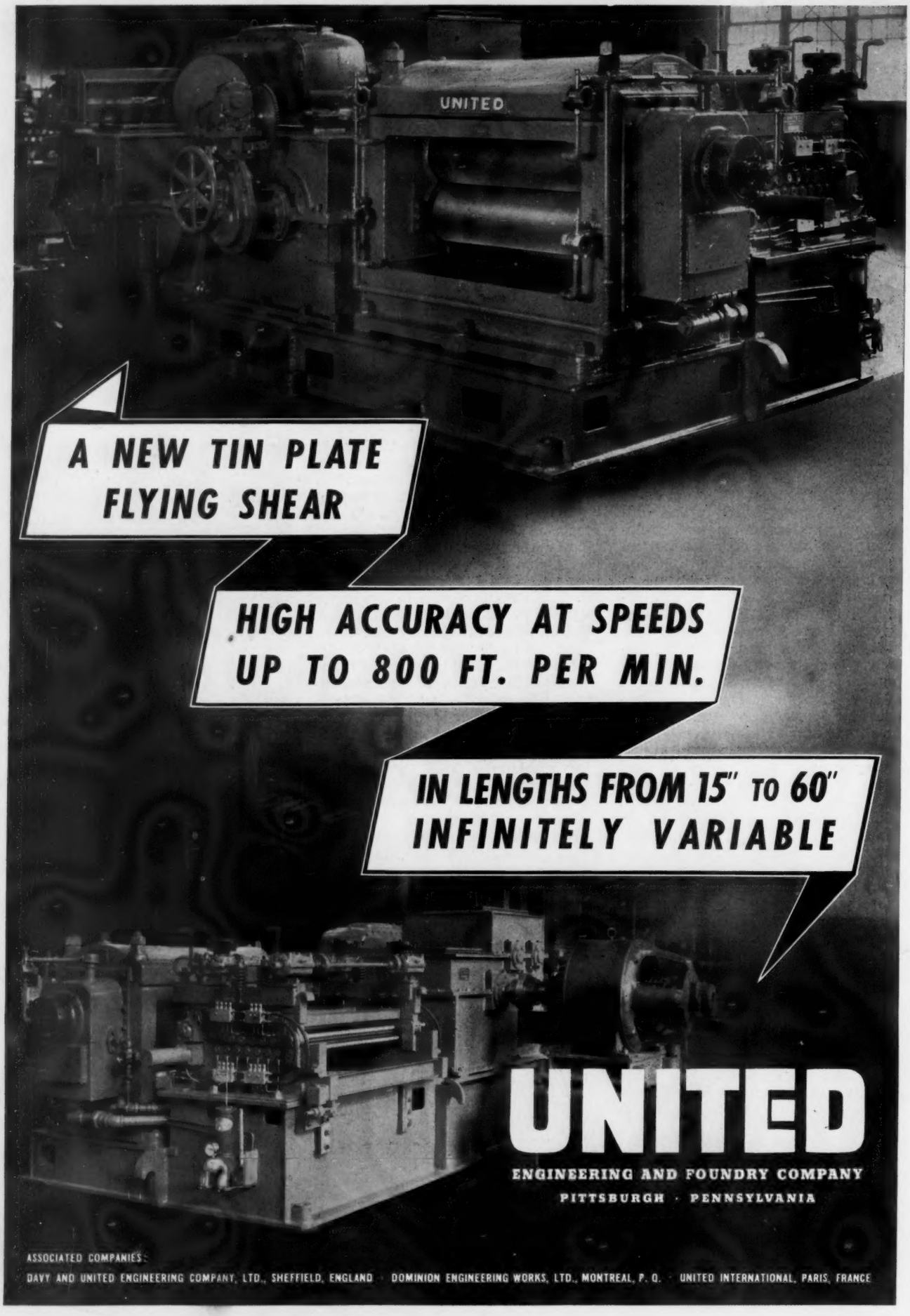
It is highly significant that Russia and Japan, who became industrialized only quite recently and whose masses of population are in every way at a much lower level than our own, have made and are making generous use of the brains, skill, technique and products of the American tool industry. In no other way could these countries have become as highly industrialized as they have within so short a time. In no other way could they have risen so quickly to world power, both in terms of competitive markets and in terms of power politics. History places heavy stress on the fact that Commodore Matthew Calbraith Perry of the United States navy opened Japan to commerce in 1852, but as far as I know it says nothing of the enterprising American tool and machinery experts who since the turn of the century have opened oriental eyes to the possibilities of the American system.

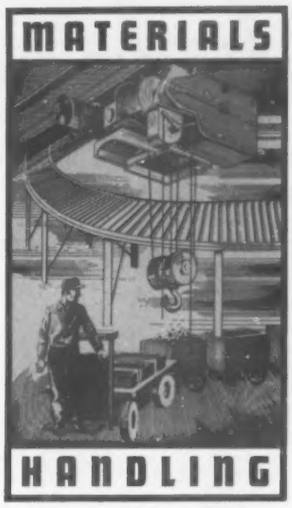
It will indeed be a sad reflection upon the "industrial ambition" of the United States if in this country —where the interchangeable system of manufacture originated and where since Eli Whitney's time it has been developed it to such a high point, primarily in the arts of peace —we should continue to suffer economic ills due in any degree to incomplete and ineffective tooling. It would be a still sorrier situation should we fail to hold our own in world markets for the same reason.

In 1800 Eli Whitney found the tools of the toolmaker little or no better than those used by Roman craftsmen in the city of Pompeii in the year 79 A.D. A set of these old Roman tools is shown in the upper left hand corner of this spread. Within 20 years Whitney had developed the basic principles and equipment of toolmaking and the interchangeable system of manufacturing. The extent to which tool engineering has developed since Whitney's time is illustrated by the contrast between Whitney's bench milling machine of 1818 (lower right) and a toolmaker's bench miller of recent design, shown above the Whitney machine. The "new day" in interchangeable manufacturing is exemplified by the shadow gage (lower left) checking Chrysler piston pins to a fraction of a ten-thousandth part of an inch.






UNITED
A NEW TIN PLATE FLYING SHEAR
HIGH ACCURACY AT SPEEDS UP TO 800 FT. PER MIN.
IN LENGTHS FROM 15" TO 60" INFINITELY VARIABLE
UNITED
ENGINEERING AND FOUNDRY COMPANY
PITTSBURGH · PENNSYLVANIA
ASSOCIATED COMPANIES:
DAVY AND UNITED ENGINEERING COMPANY, LTD., SHEFFIELD, ENGLAND · DOMINION ENGINEERING WORKS, LTD., MONTREAL, P. Q. · UNITED INTERNATIONAL, PARIS, FRANCE



Handling Scrap

Conveyor eases workers' burden in steel foundry scrap yard. Men work full 8-hour day with only half former effort. In addition, conveyor almost doubles tonnage output. Some types of scrap handled through shears at 20 tons an hour

■ DOMINION Foundries & Steel Ltd., Hamilton, Ont., has three scrap yards, and may at times have as much as 30,000 to 35,000 tons of scrap in storage depending upon its type and size. This scrap, coming from various plants in the provinces of Ontario and Quebec, is unloaded from railroad cars by overhead crane equipped with a lifting magnet. From this point on, the rehandling of the scrap becomes a difficult job, even with the magnet and crane assisting in delivering it to its next position.

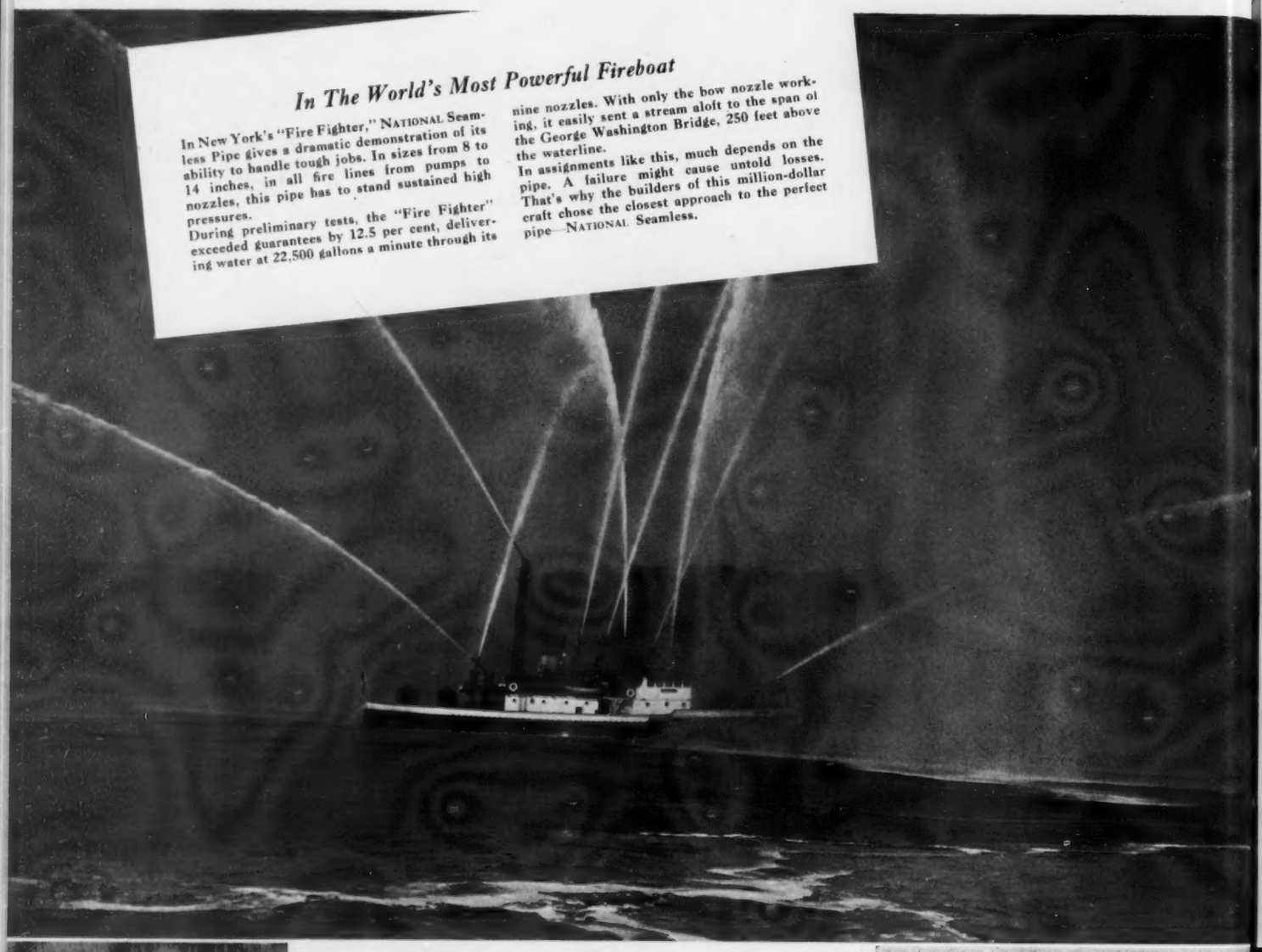
Among modern methods installed by the company this year in No. 2 yard, is what the men know as "the big shears." It is more than shears, however. It includes a 6-foot wide by 31-foot long manganese steel, apron conveyor for assisting the workers in the process of delivering the scrap to the shears, where it is cut into lengths to fit the furnace charging boxes which are 5 feet long. The sheared scrap drops over a chute to a point inside No. 1 yard. Here it is picked up by a magnet crane, loaded into the charging boxes, and taken to the furnace along with the rest of the material necessary for the making of steel.

In operation of the new handling system, the No. 2 yard crane with its magnet deposits a load of scrap on the conveyor. Men may do some preliminary straightening of the pile on the conveyor to make the scrap easier to handle at the shear,

(*Please turn to Page* 78)

(Upper) Overhead crane with a lifting magnet brings scrap to the conveyor and handles the sheared scrap to the furnace-charging boxes. (Lower) Close-up view of the heavy duty, apron conveyor which helps feed scrap to the giant shears. Photos courtesy Link-Belt Co., Chicago

Industry widens



In The World's Most Powerful Fireboat

In New York's "Fire Fighter," NATIONAL Seamless Pipe gives a dramatic demonstration of its ability to handle tough jobs. In sizes from 8 to 14 inches, in all fire lines from pumps to nozzles, this pipe has to stand sustained high pressures.

During preliminary tests, the "Fire Fighter" exceeded guarantees by 12.5 per cent, delivering water at 22,500 gallons a minute through its nine nozzles. With only the bow nozzle working, it easily sent a stream aloft to the span of the George Washington Bridge, 250 feet above the waterline.

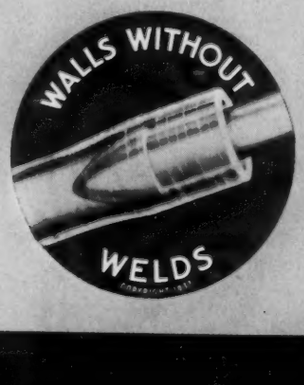
In assignments like this, much depends on the pipe. A failure might cause untold losses. That's why the builders of this million-dollar craft chose the closest approach to the perfect pipe—NATIONAL Seamless.

California's disastrous flood of 1938 furnished another reason for the preference for NATIONAL Seamless where severe stress is encountered. Of four pipe lines crossing the Santa Clara River here, only one, a 16-inch gas line of NATIONAL Seamless withstood the terrific punishment of the flood. Here it is, with a new paint job, ready to return to service. No repairs to the pipe were necessary.

Supporting the plate glass roof of a solarium in a prominent hotel is this framework of SHELBY Seamless Tubing in rectangular shape. After much development work, engineers in charge chose SHELBY because it has the strength to stand great loads of snow and ice and at the same time provides a modern, decorative appearance. SHELBY is a National Tube Company product.

NATIONAL SEAMLESS

means pierced from solid billets of finest quality steel. Only sound and flawless steel can be pierced successfully, since any existing defects cannot be covered up in the process. Thorough inspections and tests at every stage in production give you double assurance that each length of NATIONAL Seamless will display the same uniform wall strength, dimensional accuracy, and uniformity in all physical properties.



its preference for

SEAMLESS

"Walls Without Welds" give you true pipe safety where you need it most

THERE seems to be no limit to the applications of NATIONAL Seamless Pipe and Tubing in the industrial field. In some cases Seamless is successfully doing jobs which heretofore appeared impossible. In most cases, of course, it is doing jobs which have been done before—but doing them with a greater degree of safety, or in quicker time, or with less bulk or weight.

How much in actual dollars-and-cents it saves in such applications nobody knows. For the main advantages in using NATIONAL Seamless are that it prolongs life of equipment, it minimizes trouble, it keeps things going. This it does mainly by virtue of its uniform wall strength. Made by piercing a solid billet of steel, it has no longitudinal weld, no long line of possible weakness. And further, the steel is of the very finest quality; no other than perfectly sound steel could stand the piercing process without disclosing even minute defects.

With these basic advantages Seamless marches steadily on, industry ever widening its preference for this dependable product; whether the application be large or small, whether just a few feet or a long line is involved. When engineers and contractors want to take no chances, they instinctively turn to Seamless.

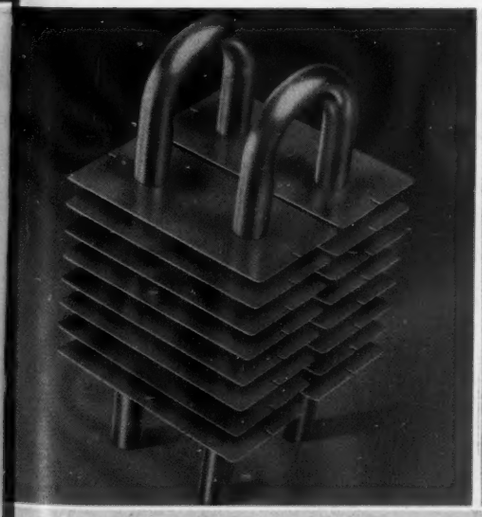
For your next pipe installation where an extra margin of safety is needed, try Seamless and obtain the utmost in pipe reliability. And remember, NATIONAL is America's Preferred Seamless Pipe—"Walls Without Welds."

NATIONAL TUBE COMPANY

PITTSBURGH, PA.

Columbia Steel Company, San Francisco, *Pacific Coast Distributors* · United States Steel Products Company, New York, *Export Distributors*

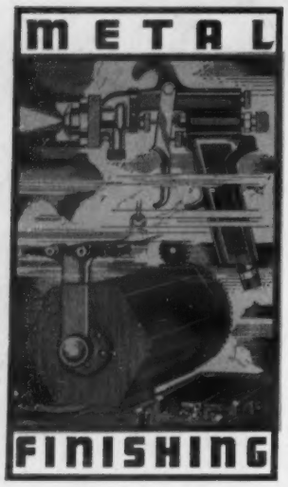
UNITED STATES STEEL



Here is an interesting fin coil of a new type used in air conditioning and cooling units in show cases. It is made from ¾-inch O.D. x 16 gauge cold-drawn SHELBY Seamless Tubing. SHELBY is an ideal tubular material, always uniform and free from flaws or defects. It is easy to form into strong, accurate coils and bends. For applications like this, you can't find a better product.

2327 feet out into the open Pacific extends this new-type pier, firmly founded on NATIONAL Seamless Pipe Piling. Original designs called for conventional piling. But when a severe storm washed away 120 feet during construction, engineers devised a new pile, consisting of a standard H-beam encased in 24-inch NATIONAL Seamless. And presto, the problem was solved.

Thousands of people in search of a new thrill ride the stratoship, an amusement device built safe, strong, and light with SHELBY Seamless. SHELBY, a product of NATIONAL Tube Company, is a standard structural material employed by designers of aircraft, automobiles, and machines, for vital parts. Available in a wide variety of sizes, shapes, wall thicknesses, and grades of steel.



Base Metal Coloring

Research discloses that many bright, durable colors can be produced on a wide variety of metals. Methods include recently developed electroplating processes as well as chemical reactions, the latter being a field of great promise

Part I

By DR. C. B. F. YOUNG*

■ THERE ARE many ways of obtaining attractive finishes on metals but only those produced by inorganic methods (aluminum coloring being the exception) will be discussed here; lacquer, varnish, paint and similar films being omitted. While some of the processes to be described are still in the experimental stage, they will serve to indicate the possibilities that lie in this field.

Aluminum can be colored by many methods. Being a silver white metal, it gives a background quite adaptable to coloring. Aluminum cannot be colored by producing its salts on the surface as these salts are all colorless. However, other metals whose salts are colored can be placed upon aluminum surfaces. Aluminum, being high in the electromotive series, easily displaces many other metals from solution to produce colored deposits.

A dead white coating can be produced on aluminum by immersing in a boiling mixture of calcium oxide, 10 grams per liter, and calcium sulfate, 10 grams per liter. A coating 0.001-inch thick is obtained in about 10 minutes. It adheres well but is comparatively soft. If left in the solution too long, grey deposits result. By partially dissolving portions of the above coatings in a slightly basic solution, some smooth battleship grays have been obtained. It is possible to dye these coatings by immersing in certain organic dyes. This, however, is not too satisfactory.

A black deposit can be obtained on aluminum by immersing in either of the solutions given in Table I. Brown deposits also can be obtained with these solutions by varying the conditions of immersion.

It is possible to color aluminum red by plating copper on its surface. This coating can be made into a black by allowing the copper to unite with a sulfide. In fact, several different colors may be secured by this method. Special precautions, however, must be taken when plating aluminum.

Table I

Black on Aluminum

Solution I

Potassium permanganate—10 grams per liter
Nitric acid, gravity 1.35—4 cubic centimeters per liter
Copper nitrate—25 grams per liter

Solution II

Arsenous acid—25 grams per liter
Hydrochloric acid, gravity 1.30—50 grams per liter
Ferric sulfate—10 grams per liter

Aluminum can be colored any hue desired by first producing an oxide coating and then introducing this treated surface into organic dyes which react chemically to form insoluble lakes. These colored coatings are an integral part of the metal.

Oxide coatings can be produced on aluminum by making this metal the anode in a suitable solution. There are many solutions for producing the oxide finish but only the sulfate, chromic acid and oxalic acid methods are commercially important. The first produces coatings most suited for coloring as this film is practically colorless, transparent and hard. Second process produces coatings of a slight greyish tinge and somewhat opaque. Finishes produced by the third solution are slightly yellow and almost transparent.

Sulfate solutions are usually more desirable than the other two as the chemicals used are cheap, nonpoisonous and the process is completed in about 15 minutes. It is handled with inexpensive equipment. Aluminum is made the anode in a solution containing sulfuric acid (specific gravity 1.86), 100 to 1500 grams per liter.

Glycerine or other inhibitors may be used in small amounts to prevent undue etching. Current density should be 15 to 25 amperes per square foot for 15 to 20 minutes, solution temperature 65 to 95 degrees Fahr. Such coatings vary in thickness from 0.0003 to 0.001-inch and have a hardness of approximately 8 on Moh's scale.

When immersed in an aqueous solution of organic dyes, the colored chemical compounds react with this oxide coating to form an insoluble lake which is precipitated throughout the coating. Acid dyes, soluble in water, are generally used. Colors thus formed are not absolutely as stable as exposure to sunlight bleaches them out in 12 to 18 months.

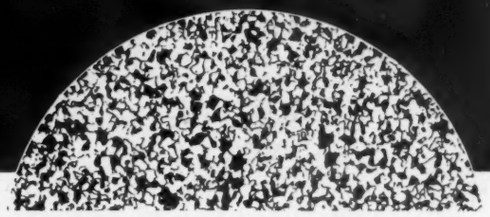
To provide permanence, inorganic coloring materials have been sought. Beautiful blue and blue-green colors in the oxide finishes have been produced by first soaking the anodized part in a solution containing 100 grams per liter ferric sulfate and then in a potassium ferrocyanide solution containing 75 grams per liter.

Yellow coatings also have been formed by immersing anodized parts in a solution of lead acetate and then in a solution of potassium

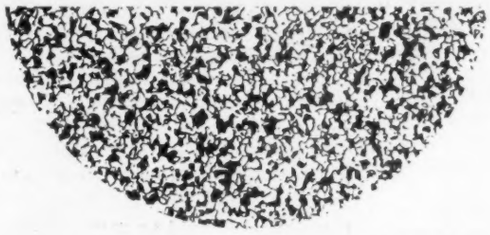
* Head, Institute of Electrochemistry and Metallurgy, 61 E. 4 Street, New York; Instructor, Chemical Engineering, Brooklyn Polytechnic Institute; Consultant.

National Steel high tensile alloy combines high strength with unusual

Ductility



ITS INHERENTLY FINER GRAIN MAKES ALL THE DIFFERENCE



The active and widespread interest in National Steel high tensile alloy can mean only one thing—that users have found in this finer-grained steel the DUCTILITY that is absolutely essential if full advantage is to be taken of all the other desirable characteristics of a high tensile steel.

Because of its exceptional DUCTILITY, this high tensile steel is constantly finding important new uses. It has been cold pressed into difficult stamped parts, such as automobile wheels, and has given excellent results in other similarly difficult applications. In the majority of cases no change in shop practice is necessary.

Practically non-aging, with a high resistance to impact and fatigue at both normal and extremely low temperatures, with exceptional weldability, and with corrosion- and abrasion-resistant properties, this high tensile, HIGH DUCTILE steel may solve your own engineering and production problems.

National Steel high tensile alloy is available in sheets, strip, plates, bars and shapes.

Our engineers will be glad to work with you in applying this steel to your specific requirements. Inquiries are invited.

GREAT LAKES STEEL CORPORATION · DETROIT, MICHIGAN

DISTRICT OFFICES: *Boston,* 1001 Statler Building; *Buffalo,* 1000 Walbridge Building; *Chattanooga,* Hamilton Bank Building; *Chicago,* 1026 Builders Building; *Cleveland,* 820 Leader Building; *Dayton,* 846 Third National Bank Building; *Indianapolis,* 1215-17 Circle Tower; *New York,* 405 Lexington Avenue; *Philadelphia,* 407 Liberty Trust Building; *St. Louis,* 3615 Olive Street; *San Francisco,* 824 Sharon Building; *Toledo,* 906 Edison Building.

DIVISION OF NATIONAL STEEL CORPORATION

chromate to produce insoluble lead chromate. This attractive yellow color is fast to light.

The oxide coatings on anodized aluminum surfaces are rather porous and will combine with many different types of materials. Immersed in "aqua dag" (colloidal carbon in water), they assume a permanent brown-black color. It also is possible to allow light sensitive silver salts to become impregnated in the coating and on exposure to light, a dark color is produced, opening up a means for making photographic reproductions.

Experiments are being made using a copper bronze powder added to a petroleum distillate. This powder is in the form of small flakes having a thickness of one micron and passing through a 300-mesh screen. Anodized aluminum sheet allowed to remain for 15 to 45 minutes in this paste was found to have copper bronze particles absorbed into the porous coating, producing a light red anodized surface.

This copper coating can be treated chemically to obtain other colors characteristic of copper. A finer particle size may produce a coating which "takes" better. Since particles, regardless of their original color, appear black whenever a minimum diameter is passed, it should be possible to produce a black by simply immersing the anodized coating into this type material. Results along these lines will be published as soon as this research is complete.

Coloring cadimum is usually done in connection with cadmium plated articles as an entire piece seldom is made from this metal. However, it frequently is colored in plate form. Like aluminum, cadmium salts generally are colorless. So it usually is colored by allowing the cadmium to react with other metals thereby producing a colored salt of the latter on the surface. Two formulas below are used to color cadmium black or brown:

Table II

Black

Potassium chlorate—6 grams per liter
Copper chloride—7 grams per liter
Temperature—160 degrees Fahr.

Brown

Copper nitrate—30 grams per liter
Potassium permanganate—2.5 grams per liter
Temperature—175 degrees Fahr.

Sulfides can be used to produce yellow deposits upon cadmium. Such a solution employs sodium thioantimonate, 30 grams per liter.

Coloring chromium is work similar to coloring cadmium since chromium is used mostly as chromium plate. One method of coloring this deposit is to immerse the material in molten sodium cyanide at 1400 degrees Fahr. for two minutes, quenched in cold water and washed free of any adhering salts (U. S. Patent, 1,937,629).

Another method substitutes an organic acid radical for the sulfate radical used in the ordinary chromium plating bath (chromic acid). Such radicals as acetate, propionate, etc., make possible gray to black deposits. Variations in this method produce attractive blue deposits.

Table III

Black on Brass

Copper sulfate—30 grams per liter
Ammonium hydroxide—Add until precipitate of cupric hydroxide almost disappears.

Black on Copper

Potassium sulfide—15 grams per liter
Ammonium chloride—240 grams per liter

Blue on Brass

Arsenous acid—115 grams per liter
Hydrochloric acid—750 cubic centimeters per liter
Water—200 cubic centimeters per liter

Blue on Copper

Potassium chlorate—100 grams per liter
Ammonium nitrate—100 grams per liter
Copper nitrate—2 grams per liter

Brown on Brass

Copper sulfate—60 grams per liter
Nickel sulfate—15 grams per liter
Sodium hyposulfite—60 grams per liter

Brown on Copper

Copper sulfate—30 grams per liter
Potassium chlorate—10 grams per liter
Temperature—175 degrees Fahr.

Green on Brass or Copper

Copper nitrate—30 grams per liter
Ammonium chloride—30 grams per liter

Chromium has a variety of colored salts, so many hues can be produced by different methods of treating this metal. An attractive green deposit, close grained and adherent, can be obtained by heating to approximately 1150 degrees Fahr. in a controlled oxidizing atmosphere.

Coloring copper and brass often is done by varying the alloy content to change the natural color. Copper, being red, harmonizes well in many color schemes while brass can be obtained in a variety of colors beginning with a bluish gray and continuing to a yellow red. However, some of these alloys have poor physical properties and do not lend themselves to many manufacturing processes. A few of the many formulas for coloring these two materials are listed.

A formula is given for coloring brass green by making it the cathode in a solution containing copper sulfate 90 grams per liter and potassium dichromate 60 grams per liter. The solution is used at room temperature with 8 to 10 volts. After the color is produced, it is set in an alkaline solution. Some attractive malachite greens have been made with this bath using about 10 amperes per square foot. However, in almost all cases the deposit had a tendency to burn near the edges.

Copper alloys are nearly all colored. Brass is in the same family as the copper-tin and copper cadmium systems. A rather attractive yellow gold alloy consists of 93 per cent copper and 7 per cent aluminum. This alloy does not tarnish and has many attractive working features.

Coloring gold seldom is attempted as the material is usually alloyed with other materials to retain its nonactive characteristic yet reduce the cost. Yellow gold, itself, is used many times as a coloring agent, applied as an electrodeposit or as a thin rolled plate mechanically held to the surface.

Alloys of gold may be deposited to produce green gold, white gold or yellow-red gold. Formulas for these baths can be obtained from many sources.

(*Concluded in March 27 issue*)

Compound Prepares Zinc Surfaces for Finishing

■ To overcome the difficulty usually encountered in applying clear or colored coatings of organic finishes to zinc or zinc-coated surfaces, Maas & Waldstein Co., Newark, N. J., has developed a pre-treatment to be used before lacquer, enamel, paint or varnish is applied. This treatment is designed to give strong adhesion between the metal surface and the finish.

Zinc or zinc-coated products are dipped in or wiped with a solution of a compound called Zinsol. This compound is said to cause formation on the surface of an alloy chemically inert to moisture and organic finishes generally, so that it forms a stable foundation for any finish.

New Rustproof Treatment Is Applied in the Field

■ International Rustproof Corp., Cleveland, announces Corrosol No. 2 metal conditioner, especially designed for preparing rusted metal surfaces for painting. It can be applied, with rubber sponge and a wad of steel wool, to all types of heavy steel structures where dipping would be impossible. It is suitable for highway bridges, storage tanks, steamships, structural steel around industrial plants, etc.

The new material is harmless to the workmen applying it, will cover from 800 to 2000 square feet per gallon and is a low-cost treatment.

Composite Rolls

Casting two types of iron together produces mill rolls, the working surfaces of which can be varied accurately to give best results for particular service conditions. Rolls show long life, maintain working surface well, produce quality work

By F. C. T. DANIELS
Vice President
Mackintosh-Hemphill Co.
Pittsburgh

■ THE NEW composite rolls built by Mackintosh-Hemphill Co., Pittsburgh, have a body shell of a hard, tough, wear-resistant, high-alloy cast iron with body cores, necks and wabblers of a high-strength cast iron. Both materials are cast together to form an integral product with a perfect bond between the two materials. They cannot be separated by any mechanical means.

These composite rolls are cast similarly to the method used in making chilled iron rolls except that the metal which ultimately forms the outer working surface of the body of the roll is cast into the mold first. Then it is allowed to remain in situ for a predetermined length of time so it can solidify to the proper depth. The metal which is ultimately to form the central portion of the bodies, necks and wabblers is then poured through the mold, completely displacing all the original hard metal which has not been solidified.

Thus it is possible to obtain the desirable characteristics of Mackintosh-Hemphill composite rolls. The two metals bond together as one because the liquid metal of the one replaces the liquid metal of the other. No reversion from the solidus to the liquidus is necessary. It is a unit casting.

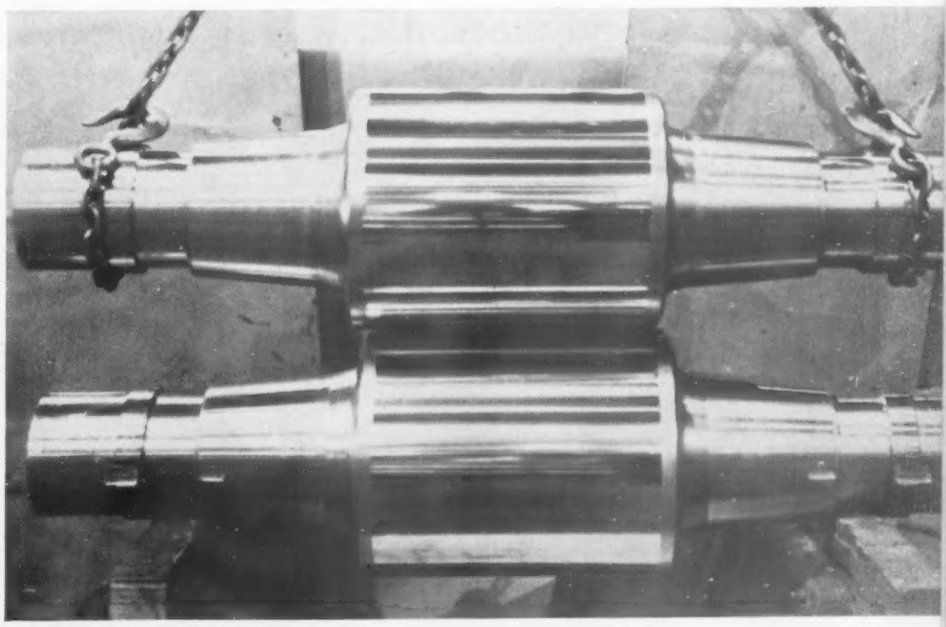
Physical properties of the working surfaces of the body are made to suit a wide variety of working conditions. They can be made extremely hard, far harder than possible with convention rolls and this high hardness does not make them weak and fragile.

Surface hardness of the body is varied from 65 to 95 on the scleroscope C. scale according to the service which the roll is to meet. The hardness penetration extends to a depth of 2 to 4 inches per side, thus permitting the utilization of the fullest diameter reduction possible under the mechanical limitations of the mill design. In use, the rolls require no additional mill precautions over those ordinarily required for standard rolls of equivalent hardnesses. In fact they are quite stable and will stand considerable thermal and mechanical abuse without damage.

A wide range of properties gives the composite rolls a wide field of application. Their selling prices come in the higher brackets of the alloy cast-iron rolls, and in general their use over that of chilled iron rolls is only justified where severe service conditions are to be encountered. They are about one-half the price of forged and hardened steel rolls for equivalent service.

For work-roll service in 4-high, continuous, hot, wide-strip mills, composite rolls are furnished at 65 to 85 scleroscope C. scale and may be used on all the stands of the finishing mill. Those rolls testing 80 to 85 scleroscope are used on the finishing stands, and when they have completed their life there they are moved back and used in the earlier stands to their full diameter reduction. They thus are able to produce large tonnages, making them a valuable roll for this work.

For 4-high, cold, wide strip mills, tandem mills, skin pass mills and cold-reduction tin-plate mills, work rolls of the composite type showing 90 to 95 on the scleroscope C. scale are used. These are ideal applications for these hardest grade com-



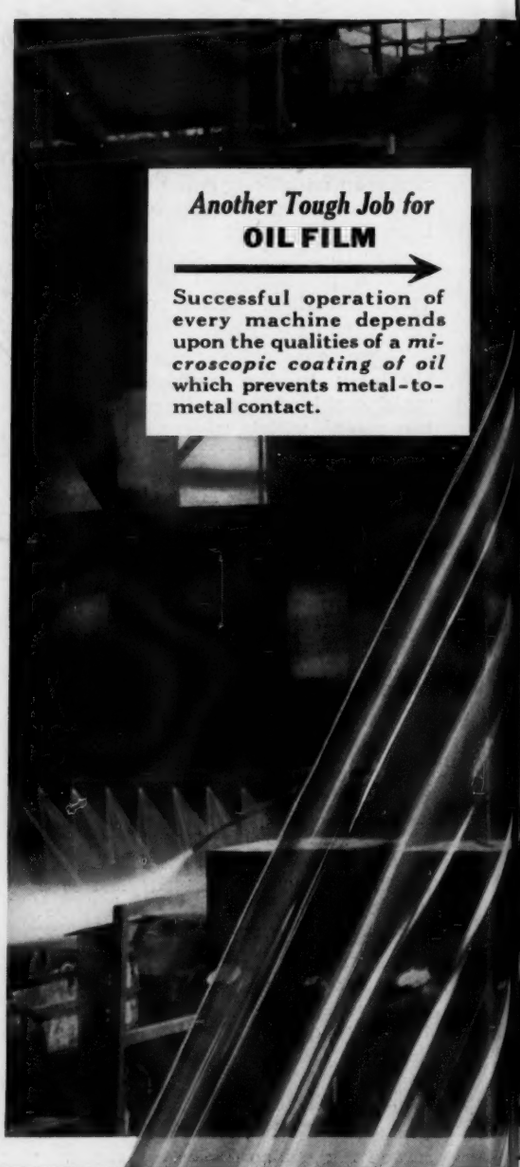
Unretouched view of composite rolls for use in finishing nonferrous sheets

THE RIGHT SPOT FOR AN OIL

Built to

Nothing has been spared to make the Gargoyle D.T.E. Oils that are used for modern roll neck bearings, the finest oils for the vitally important job of protecting this equipment.

These oils have great resistance to chemical change...and a tremendously tough film that withstands high temperatures and pressures...assures positive protection under all conditions.


Another Tough Job for
OIL FILM
Successful operation of every machine depends upon the qualities of a *microscopic coating of oil* which prevents metal-to-metal contact.

THE SOCONY-VACUUM man offers you a complete line of lubricants, plus these *exclusives:*

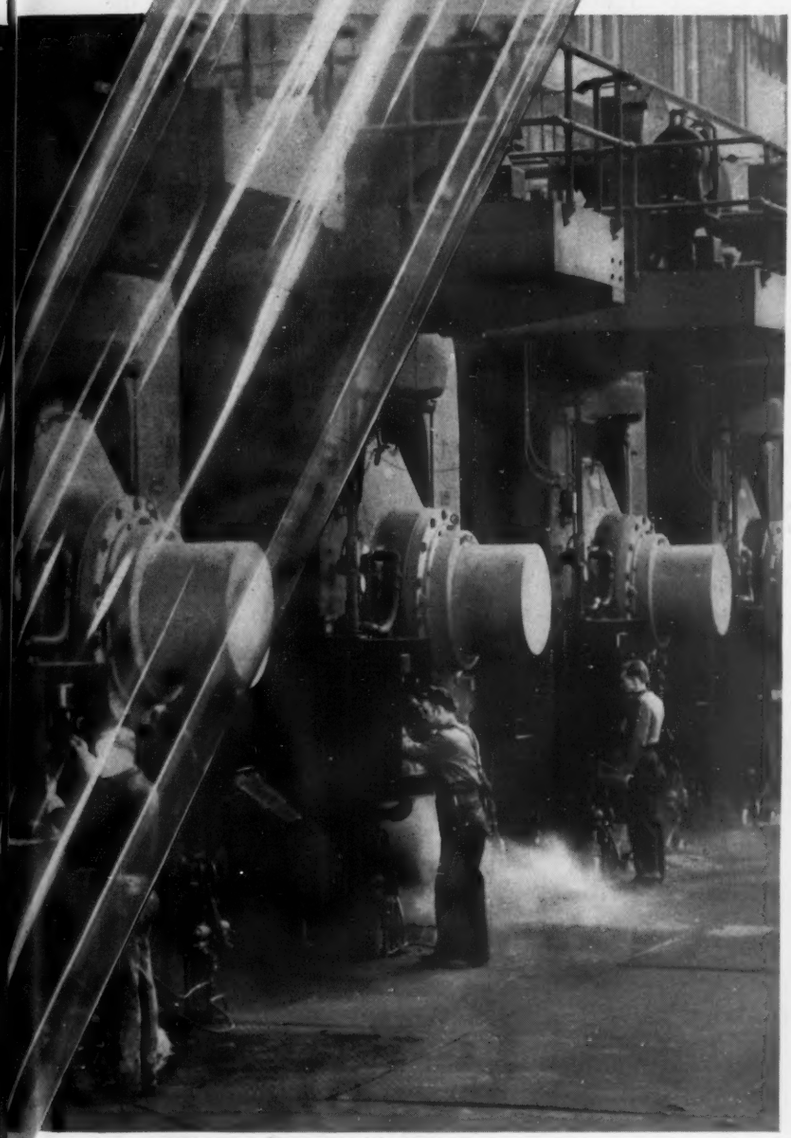
The right lubricant for every machine...and new lubricants ahead of new needs...developed by world-famous research laboratories through close cooperation with machine builders.

73 years' experience—thousands of case histories—to guide in prescribing the right use of these lubricants to gain Lubrication Profits for you.

World-wide distribution and guaranteed uniformity—the same quality available everywhere.

do a Job—

NOT TO MEET A PRICE!



SOCONY-VACUUM

Industrial Service and Lubricants Help to Lower Costs by

Correct Lubrication

GARGOYLE Lubricants

posite rolls as they have remarkably hard, wear-resisting working faces. When highly polished, these faces produce an extremely high grade surface on the product. When desired for production of dull finished stock for subsequent coating, the rolls take an excellent sand-blasted or etched surface which maintains itself for a long time.

It has long been an axiom with iron roll makers, based mostly on actual service results, that iron rolls of a certain scleroscope hardness are fully equivalent to hardened steel rolls having a hardness of 10 points greater. This has recently been confirmed by the International Nickel Co.

It is not possible to furnish the hardest grades of these composite rolls with the axial hole, and this may be thought to be an objection to their use as some operators use the axial hole already present in hardened steel rolls for the application of internal coolant. Others do not use it at all on equivalent mills and processes. The necessity of the axial hole thus is questionable. Hardened steel rolls have this hole because it is necessary to prevent rupture during quenching.

Thermal Expansion Is Low

Mackintosh-Hemphill composite rolls are cast iron and have a lower coefficient of thermal expansion than steel. When heated, they do not expand so much or so rapidly as steel rolls. Expansion is similar to chilled iron and is of a uniform quality. It is constant from roll to roll and from degree to degree. As these rolls do not have the capacity of hardened steel for absorbing heat, it has been found that the axial hole is unnecessary.

In 2-high, cold-finished sheet and tin mills, these rolls are giving excellent service. Their ultimate total life is beyond prediction to date. They are being used successfully in rolling tin plate, stainless steel, auto sheets, etc.

Rolling practice with these rolls is similar to when using conventional rolls. They may be caused to hold their shape with the application of heat, as with ordinary chilled iron rolls. Even a gas flame may be played upon the rolls with safety. They are polished in the usual manner except that polishing is required less frequently. However, they can not be turned in a lathe but must be ground. For some of the smaller mills that have no grinding facilities, it is the usual procedure to return the rolls to the maker at intervals of about a year at which times they are reground and the roll bodies trued up.

For 2-high, cold-finishing, nonferrous mills, these rolls are showing remarkable results in producing high grade finishes. Their unusual ability to attain a high polish is transmitted to the product to give an unmarked, highly polished, mirror-like finish, found to be so desirable in nonferrous sheet. A producer of copper sheet who installed these rolls found it easy to make a much superior sheet than obtainable before.

Because of the wide variation of the properties possible with Mackintosh-Hemphill composite rolls, all proposed service applications should be studied carefully by a roll engineer thoroughly familiar with the subject to assure installing the type of roll best suited to the service conditions at hand.

In further reference to making these rolls, extensive researches indicate that not only should the total expansion of the core, after the cooling of the roll from the casting temperature to the room temperature, be adapted to the total expansion of the sleeve, but that the variations in volume of the core and of the sleeve should be adapted to each other throughout the whole cooling process and throughout each cooling stage. This is achieved by so selecting the materials as to subject approximately equal portions of the substance of the core and of the sleeve to the same critical transformations at the same intervals of time throughout the period cooling is taking place.

This is effected here by casting compound rolls having a sleeve of white martensitic structure and a core of cast iron alloy and aiming by suitable choice and proportioning of the constituents of the alloy to obtain a graphitic structure for the core which contains martensitic mixed crystals in an amount corresponding to that in the sleeve structure.

Tension Stresses Avoided

The term "corresponding" is to be construed as indicating that the amounts of martensitic mixed crystals in the core and in the sleeve are such that on microscopic observation of the two parts, an approximately similar total impression of the two grain structures is obtained. The existence of such correspondence in the cooled roll is evidence of such inherent relation between the shell and core metals of the roll that the expansions occurring on cooling take place to approximately the same extent and at approximately the same time. Thus tension stresses between the core and the sleeve are avoided during the cooling or, at any rate, are so small that they can be borne by the sleeve without difficulty. Such a core structure can be made up from the most varied alloy materials by suitable proportioning. If, for example, the material for the sleeve consists of an alloy containing:

	Per Cent
Carbon	3.6
Manganese	4.5
Nickel	2.5
Chromium	1.5

(Remainder iron and the usual impurities.)

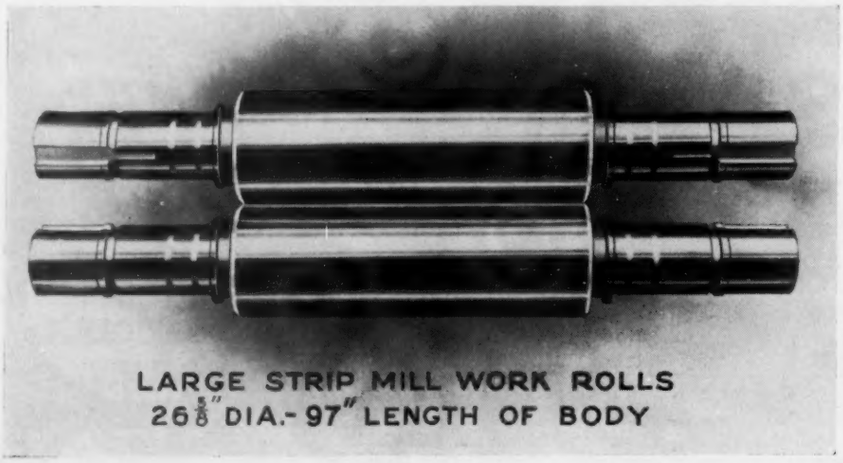
Then core will preferably contain:

	Per Cent
Carbon	3.3
Manganese	10.0
Silicon	3.5

(Remainder iron and the usual impurities.)

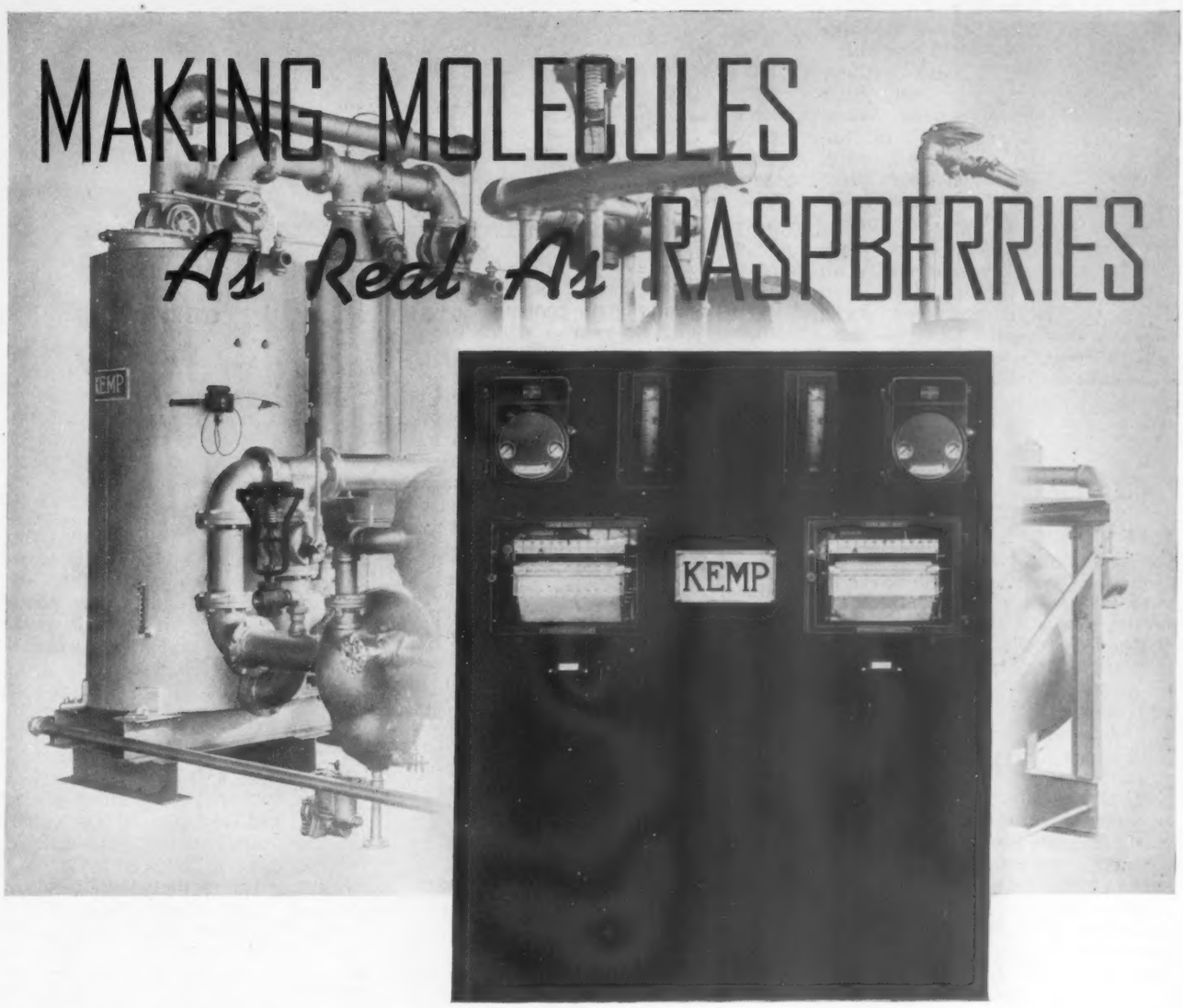
When a roll is cast with use of two suitable formulae such as those given above for the sleeve and the core of the roll, the sleeve structure then cools martensitically. The core alloy has martensitic mixed crystals in an amount corresponding to that in the sleeve structure. It is, however, sufficiently tough because, owing to the high silicon content, the carbon is not combined as iron carbide but is deposited as finely divided graphite.

Composite rolls also are made in the extremely large sizes as shown here



LARGE STRIP MILL WORK ROLLS
26⅝" DIA.- 97" LENGTH OF BODY

MAKING MOLECULES *As Real As* RASPBERRIES



Molecules are no mystery to the Kemp Constant Analysis Monitor. The twin installation shown above provides a sensitive, practically instantaneous electrical nervous system for a pair of Kemp 15,000 c. f. h. Atmos-Gas Producers in one of the largest and most modern sheet mills in the world.

Atmos-Gas that goes to these annealing furnaces is *right* and *stays right*, for by means of its constant sampling and constant analysis of the product gas, the C. A. Monitor automatically compensates for the uncontrollable variables the instant they effect the composition of the Atmos-Gas.

The C. A. Monitor operates Kemp Atmos-Gas Producers (and any other controllable atmosphere generator) of all capacities from 1,000 to 15,000 c. f. h.

Special, detailed bulletins on the C. A. Monitor and Atmos-Gas Equipment are now available. Address The **C. M. Kemp Mfg. Co., 405 East Oliver St., Baltimore, Md.**

KEMP of BALTIMORE

In-Line Press Shop

Layout permits natural flow of work. Drawpins spaced uniformly on all bolsters allow great flexibility—one large press working as many as six dies simultaneously. Same six may be handled individually or in smaller groups

■ AT THE plant of Wayne Pump Co., Ft. Wayne, Ind., the largest portion of production consists of gasoline pumps for automobile service stations. These pumps consist mostly of pressed steel parts made in a press shop which might be considered a model of flexibility and efficiency for high production of a large number of different parts.

The gasoline pump design employed by Wayne Pump Co. consists primarily of a heavy cast iron base on which are mounted four pressed steel corner posts supporting a cabinet. Numerous brackets and shelves fastened to the corner posts support the gasoline pump meter, indicating or computer device and associated equipment in the pump interior.

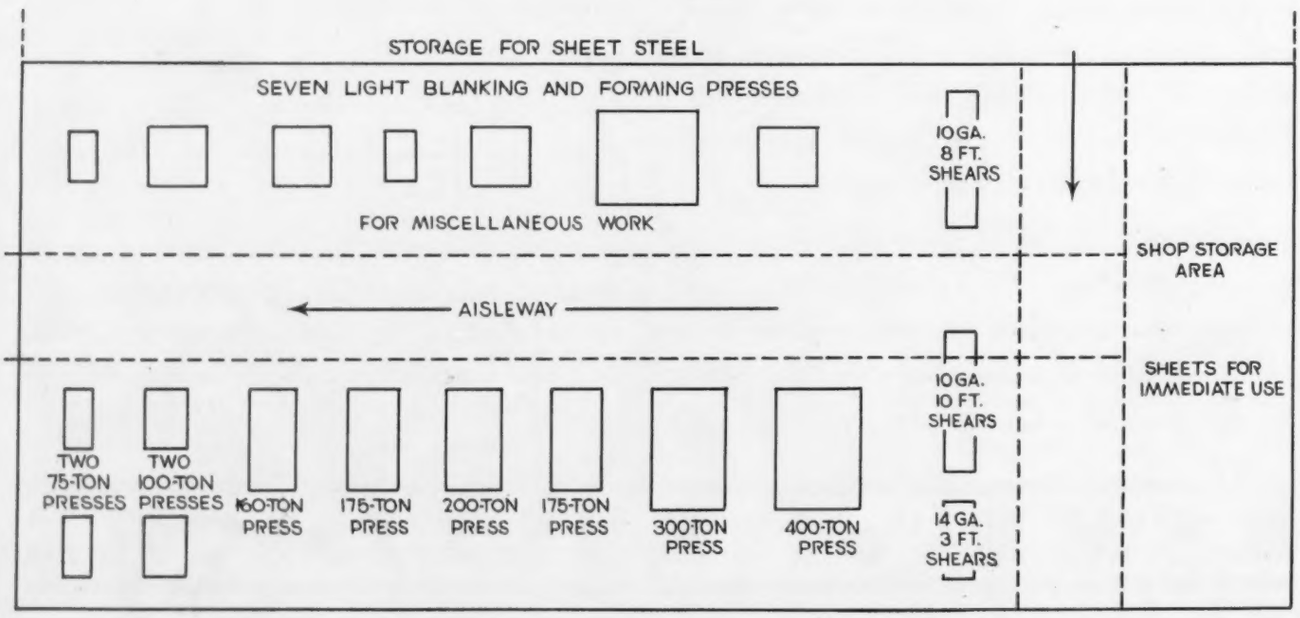
Outside surfaces of the pump consist of four sheet steel panels, two of which are permanently fastened in place during construction of the pump at the factory. The other two panels are mounted on hinges so they can be swung open to provide access to the interior. Since pumps are furnished to a large number of service station users who wish individual and distinctive types of pumps for their stations, considerable variation exists in dimensions, type of top, scale arrangements, etc. However, the basic design outlined above is followed for all types.

Originally, making the four corner posts consisted mainly of producing the principal right angle bend with a various number of flanges to accommodate side panels. There were welded to this the various types of brackets to support interior parts of the pumps and to fasten the corner posts to top and bottom portions of the pump. However, it has been found more economical to include the forming of projections in the corner posts themselves, which then act as brackets to support the parts and to hold the end posts in position. This has eliminated practically all of the welding formerly done on corner posts.

These posts are made from 10 or 12-gage cold rolled steel which is purchased sheared to width and length required, that is, 3 9/16 inches wide by 70 inches long. These pieces are blanked and pierced on a 400-ton press equipped with air cushion control. This is followed by lancing various holes in the piece, bending the ends, turning over the ears and embossing, these operations being done on a 300-ton press. Sometimes these two presses are set up for consecutive operation so that operator of the second press takes the work from the first press and loads it into the second press, piece by piece.

Third step in production of these

Layout of press shop at plant of Wayne Pump Co., Ft. Wayne, Ind. Not complete or to scale



It's a DOG'S LIFE
you're leading if you have to be constantly dogging the footsteps of your source for Sheared Steel Plate.
'Tain't necessary.
WORTH SHEARED STEEL PLATE is the finest quality obtainable, measures to your exacting standards . . . and your every order is given personalized service that guarantees delivery as and when promised!
WORTH STEEL COMPANY
CLAYMONT, DEL.

Call the nearest WORTH Representative.

WORTH

NEW YORK, N. Y. Wm. C. Dickey	HOUSTON, TEXAS The Corbett-Wallace Corp.	SAN FRANCISCO, CALIF. W. S. Hanford	LOS ANGELES, CALIF. Ducommun Metals & Supply Co.
PITTSBURGH, PA. McKee-Oliver, Inc.	SEATTLE, WASH. National Steel Sales, Inc.	CLEVELAND, OHIO E. F. Bond	BOSTON, MASS. H. J. Linn Co.
ST. LOUIS, MO. Hubbell & Sharp	PORTLAND, OREGON National Steel Sales, Inc.	DETROIT, MICH. H. L. Sevin	MONTREAL & TORONTO, CAN. Drummond, McCall & Co., Ltd.

corner posts is to form the right angle bend. This is followed by a second forming operation which bends the post to form a Z-bar. Both of these operations are done in the same dies by simply removing the work and turning it over. This completes the corner post forming operations.

Side Panels Drawn

Side panels for the pumps are made from 18-gage stock. These pieces, about 67½ inches long, are given a 4-inch draw and are about 14 inches wide after being drawn. This 4-inch draw is produced in a press equipped with three sets of air cushions to control accurately the amount of pinch. Accurate control is most essential in high quality deep drawing such as done here. These pieces are produced at the rate of 120 per hour on a straight side mechanical press equipped with an air clutch. This press has an elevating mechanism built in it to facilitate changing dies.

In addition to the production of the corner posts and side panels, the main parts of the pump structure, this press shop handles a wide variety of blanking and forming operations on smaller pieces and so has a wide variety of presses.

Layout of equipment in the press shop is roughly indicated in the accompanying diagram. Stock material comes from storage on flat cars at a point near the west end of the shop and is stocked in an area across the end of the shop.

Adjoining this area are three shears. The smallest handles up to 10-gage material in lengths up to 8 feet. The second shear also handles up to 10-gage material in lengths up to 10 feet. The third shear has sufficient capacity to handle 14-gage material in widths up to 3 feet. The center shear is of very latest design and is equipped with hydraulic hold-downs to facilitate accuracy in cutting operations.

Line of main presses extends down the shop near the center of the room as indicated. These are arranged in order of their size with the largest press being first in line. This unit is rated 400 tons capacity; the second press, 300 tons; third 175 tons; fourth, 200 tons; fifth 175 tons; sixth, 160 tons. In addition to these, there is a 100-ton press along the south wall next to the shears and also a row of seven blanking and light forming presses ranging in size from 40 to 100 tons along the south wall as indicated in the layout diagram.

Between the two rows of presses is a large aisleway for transfer of material. At the east end of the shop are four other presses, two of 100-ton capacity and two rated 75 tons.

With so many presses it is quite essential that some means be provided to assure perfect interchangeability of dies since production requirements may vary greatly. For instance, sometimes the first three presses are set up to operate in sequence with the work progressing piece by piece down the line. At other times the second, third and fourth presses may be operated in sequence. During some of these operations it may be possible that parts are required which are usually made in these presses. Under these conditions the dies ordinarily used in one of the larger presses will be fitted in to one of the smaller presses to handle the particular production work at hand.

To assure this interchangeability, bolsters on all presses are drilled on 4-inch centers for draw pins making all the dies interchangeable in all presses. This also makes it possible for as many as six dies to be operated simultaneously on one of the big presses. Such interchangeability has been found a most valuable feature in operation of this shop and has been a large factor in reducing costs of formed steel parts here.

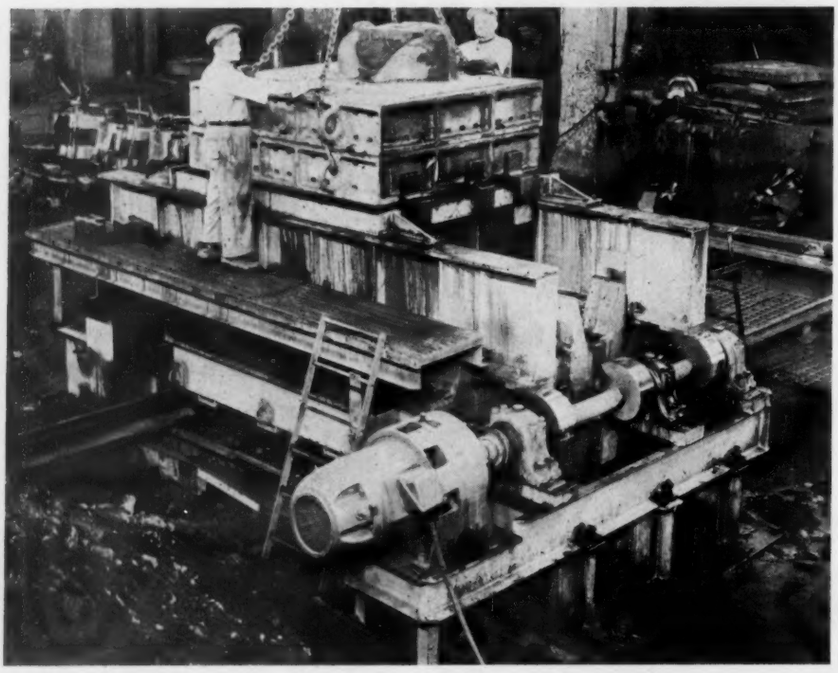
Dies Handled by Trucks

Another feature of particular interest in this shop is use of gasoline trucks to change dies. A 3-ton platform lift truck is used. It will handle the biggest dies. No overhead cranes or hoists are used in this shop to change dies, all the work being handled by the lift truck. This method has been found quite practical and has proved a time saver in many cases.

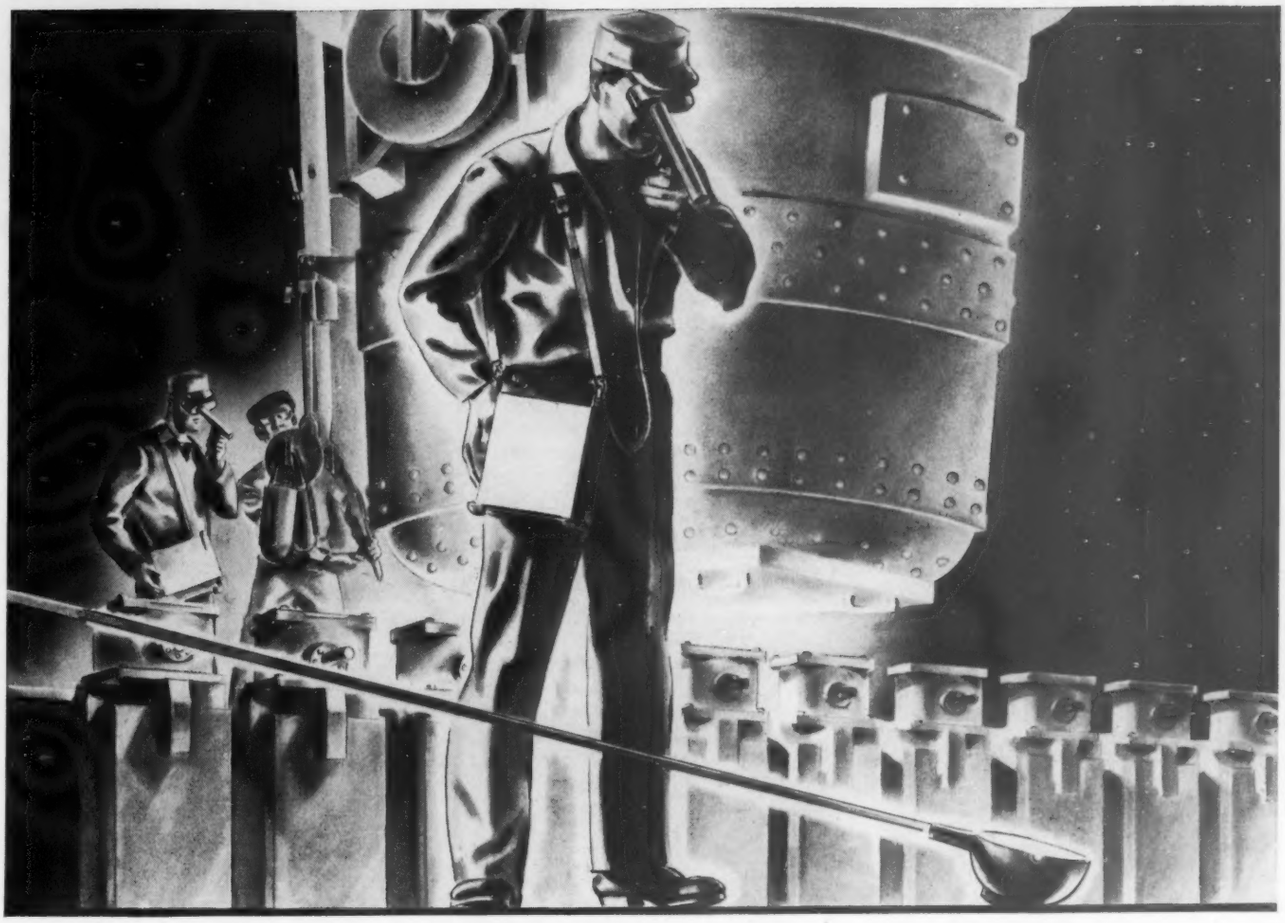
Typical of the smaller pieces formed in the shop is the spider which goes across the top of the pump and spaces the corner posts. It also supports the cap or top cover. This is made from 14-gage stock. The piece, approximately 11 x 15 inches, is given a 3-inch draw, form and trim using two dies.

Portable, roller type, gravity feed conveyors are widely employed in press operations. These are used not only to feed sheets to the presses but also are widely used to feed parts from press to press during consecutive operations. Being portable, any particular setup desired can be arranged quickly and completed work can be stacked in areas with little limitation as far as the storage area's relation to the location of the press.

Jolts Sand from Ten-Ton Mold



■ **Designed to speed separation of sand from castings in large molds, this machine raises and drops a 20,000-pound mold 83 times a minute at the Everett steel foundry of General Electric Co., Lynn, Mass. Sand is shaken out and drops through a grating. All-welded machine is powered by a 20-horsepower motor that turns a heavy shaft carrying three cams which lift and drop one end of the shake-out beams. Falling load is absorbed by a 6000-pound steel casting, and entire machine is mounted in heavy structural steel frames resting on a concrete slab foundation**



Steel Making Is Still A PERSONAL Business

Alloy Blooms, Billets and Bars
Carbon and Alloy Seamless Tubing
Tool and Fine Steels
Stainless Steels
—
Open Hearth and Electric Furnace Quality

The wonders of modern steel mill equipment loom large in the public eye—so large that the importance of the human element is sometimes lost sight of.

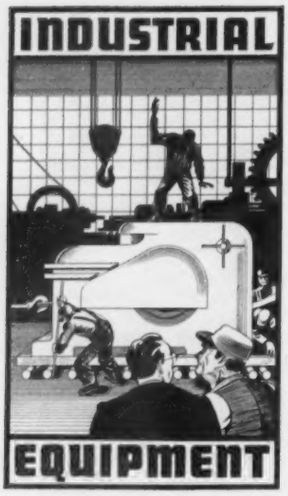
Despite the tremendous advances that have been made in steel mill mechanization during the last 20 years, steel making is still a *personal* business. In other words no substitute for human brains, skill and experience have yet been found. Machines are only the instruments through which these qualities are expressed.

GOOD WILL BASED ON GOOD STEEL

Men are still the principal factors in the maintenance of the high standard of quality for which TIMKEN Alloy Steels and Alloy Seamless Steel Tubing are so well known and we do not believe that a finer, more capable group of technicians and workmen can be found anywhere.

THE TIMKEN ROLLER BEARING CO., CANTON, OHIO
Steel and Tube Division

TIMKEN
ALLOY STEELS

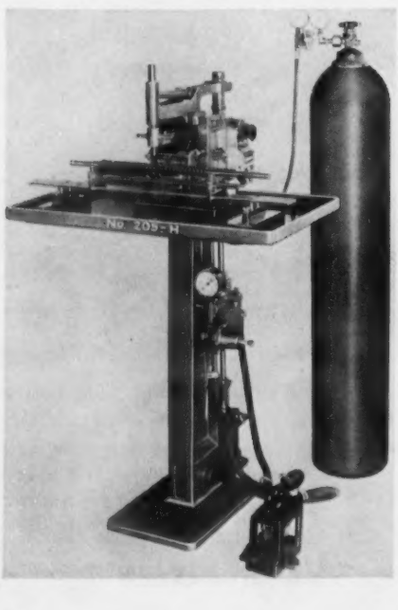


Spot Welding Machine Has Gas Economizer

■ Eisler Engineering Co., Newark, N. J., has placed on the market an electric spot welding machine equipped with an automatic hydrogen gas economizer. This equipment is for welding molybdenum, nickel and similar metals.

To prevent oxidation, hydrogen is introduced at time of welding, and flow of the gas is directed to the exact spot where welding takes place. Economizer and shutoff valve are so arranged that immediately after weld is completed the gas is cut off. Only during the actual welding time does the valve permit gas to flame over the weld. This not only prevents oxidation but keeps material from becoming brittle, as sometimes occurs where fine molybdenum wires are welded to heavy side wire guides for large electronic tubes.

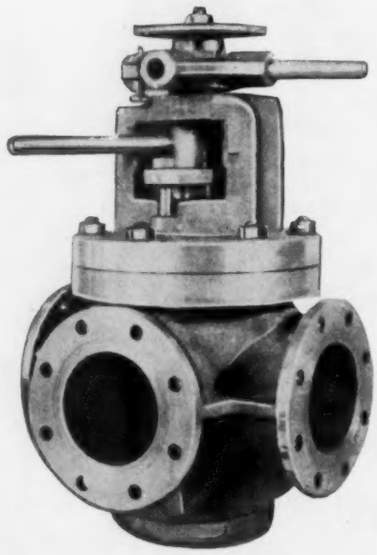
Machine illustrated is an air-operated, vertical plunger type with a capacity of 5 kilovolt-amperes. These units are available in sizes up to 250 kilovolt-amperes.



Announces New Line of Brass Lift-Plug Valves

■ Homestead Valve Mfg. Co., Coraopolis, Pa., has announced a new line of three-way brass lift-plug valves for use on air, water, oil and gas services at working pressures up to 150 pounds and temperatures below 400 degrees Fahr.

Valves are available in sizes from 1¼-inch to 3½-inch, with three different styles of port arrangement. Style D permits flow from either end and out the side opening, or vice versa; Style E permits flow from the lefthand end and out the side opening or straight through; Style F permits flow from the righthand end and out the side opening or straight through.

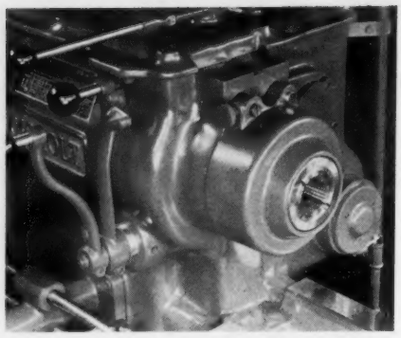


Direction of flow is changed by a quarter-turn of the operating lever.

Pads Easy to Remove From New Collet Chuck

■ Gisholt Machine Co., Madison, Wis., has brought out improved collet chucks for its Nos. 3, 4 and 5 ram type universal turret lathes and 1L, 2L and 3L high production turret lathes. Chucks have capacities up to 2½-inch diameter for the ram type machines and up to 4½-inch diameter on the high production lathes.

In removing pads from the new chucks, it is necessary only to slip off the light aluminum chuck guard, after loosening a thumb screw, and take out the cap screws that hold the pads in place. Chuck is of the push-out type. It has a four-jaw master collet provided with four pads. Collet hood is bolted and keyed directly to the spindle nose. Holes through the collet hood permit removal of pad screws and changing of collet pads without removing collet hood from the spindle.



Ground collet pads are furnished to fit any size or shape of bar stock.

Unit Controls Battery Recharge Automatically

■ Electric Storage Battery Co., Allegheny avenue and Nineteenth street, Philadelphia, recently introduced the automatic Model MP unit for controlling the recharging of storage batteries used in electric industrial trucks.

Unit consists of a metal case on the cover of which is an instruction plate, a dial with a hole through which protrudes a knob for resetting the time-switch, and two colored domes, one white and one green. Inside the case are an inverse temperature compensated voltage relay, a synchronous motor-driven time switch, an auxiliary relay, two signal lamps and the necessary connection terminals.

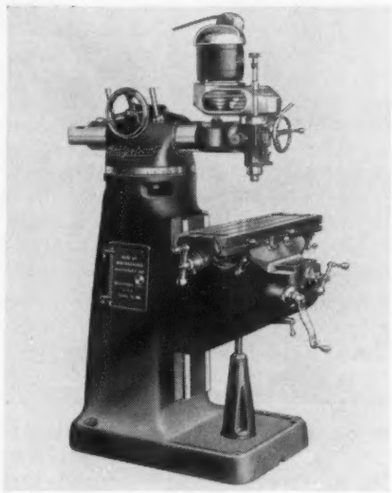
All that is necessary to start recharge of the battery is to insert

charging plug and reset control knob. Then signal lamp lights up to show battery is on charge. When charge is complete, circuit is cut off automatically and the white light goes out and green light comes on to signal that battery is completely recharged.

Turret Milling Machine Has Adjustable Spindle

■ Bridgeport Machines Inc., Bridgeport, Conn., has announced a turret milling machine, on which the spindle can be moved over a large area and can be set at any angle. Provision is made for a slotting attachment at opposite end of the mounting, making possible use of the machine for two different operations.

This milling unit weighs 1500 pounds and is of a size convenient



for hand operation. It has a 15-inch diameter turret with a 5-inch overarm. Spindle speeds are 275, 425, 700, 1050, 2100 and 4250 revolutions per minute. Micrometer depth stop is graduated in steps of 1/1000-inch.

Contour Grinder for Tool and Diemakers

■ Stanley Electric Tool division, Stanley Works, New Britain, Conn., announces a new high speed contour grinder, No. 150, for tool and diemakers' use in finishing dies, gages, templets and special shapes.

Using various shaped mounted points, up to ¼-inch shank, in the chuck or wheels on arbor, many grinding operations can be done rapidly, eliminating time spent in stoning and filing. Motor unit can be easily removed from holder and used with special accessories for tool post lathe grinding.

Equipped with a ⅜-horsepower universal motor, operating at a speed of 18,000 revolutions per minute, contour grinder has a work ta-

ble with 12 x 12 inch top and an adjustable light fixture. Motor is held directly under work table in a holder that is adjustable from 90 to 45 degrees. Mounted point, wheel or rotary file projects through opening in table top.

Streamlined Spray Gun Offered in Two Styles

■ Electric Sprayit Co., 220 North Broadway, Milwaukee, has announced the STR spray gun, a streamlined model regularly furnished in two styles—either as a pressure feed gun with round, fan and angle spray internal mix nozzles, or as a syphon feed gun with external breakup nozzle. Both styles convert instantly from bleeder to non-bleeder guns, thus making them suitable for use with either portable compressors or air lines.

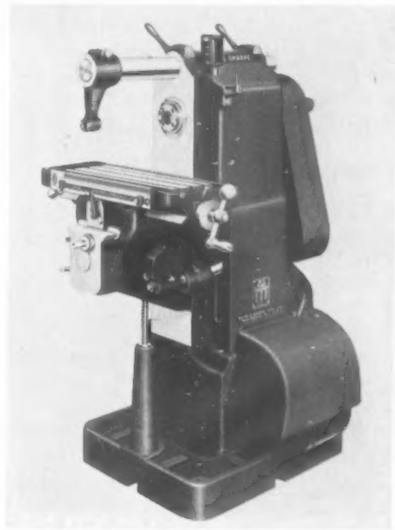
Gun body and removable cover are die-cast aluminum, and one-quart container also is aluminum, making the unit exceptionally light and easy to handle. An oil and moisture filter is built into the handle of the

gun to remove every vestige of oil and moisture from the air. All working parts of the spray gun are enclosed to eliminate possibility of clogging, and controls are located at back of the gun. Air nozzles and fluid tips are case-hardened steel. List price of complete gun with container and three nozzles is $6.50.

Announces Milling Unit For Job-Lot Production

■ Brown & Sharpe Mfg. Co., Providence, R. I., has added to its line the No. 0 plain milling machine, designed for making medium-light cuts on job-lot or small quantity production, and for small parts manufacture.

Table has an 18-inch longitudinal feed. Transverse and vertical adjustment are both manual. Spindle drive is through gearing and two 4-step cone pulleys inside column, and power is provided by a 1-horsepower, constant-speed motor, operating at 1200 revolutions per minute. Table feed drive is through a shaft



driven from a cone pulley on rear and of spindle.

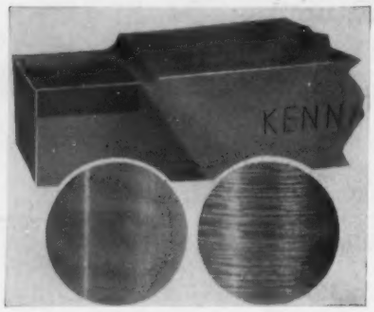
There are 8 changes of spindle speed, approximately in geometric progression, from 120 to 1350 revolutions per minute, and 64 rates of table feed are available, from 5/16-inch to 79⅝ inches per minute.

Hard Carbide Alloy for Machining Tough Metals

■ McKenna Metals Co., Latrobe, Pa., has placed on the market a hard carbide alloy, known as Kennametal, for machining tough metals such as steel, heat-treated up to 500 brinell, combining roughing and finishing in one operation. Basic ingredient is tungsten-titanium carbide. This alloy may be used also for machining monel, malleable iron, cast iron, brass bronze and aluminum.

Kennametal is available in three standard styles of blanks from

which tools may be tipped. Manufacturer offers also 18 styles of tipped tools for reaming, boring,



tapping, milling, gaging, etc. Illustration shows Style No. 11 tool, tipped with the new alloy, and insert at left shows finish of bar stock machined by this tool (magnified three times).

This alloy is said to permit a great increase in cutting speed and to permit more pieces per grind of the tool.

Conveyor Belt Layer Absorbs Severe Shocks

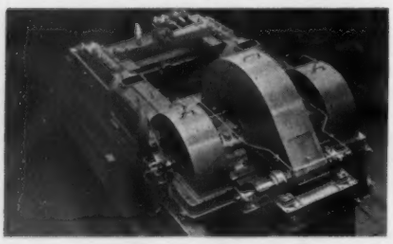
■ Mechanical Goods division, United States Rubber Co., 1790 Broadway, New York, has announced improved construction of its conveyor belts, accomplished by imbedding a special weave breaker-strip fabric in a heavy layer of soft white gum. This layer is inserted next to the belt carcass as an integral part of the belt cover. It provides a shock absorbing cushion for the belt cover.

This type of construction is said to increase effectiveness of the cover in resisting the gouging, snagging and other severe wear encountered in heavy service.

Synchronized Control For Reciprocating Pumps

■ Worthington Pump & Machinery Corp., Harrison, N. J., has developed a synchronized unloading and loading device for automatic delivery control of high pressure reciprocating pumps.

Suction valve-controlled and air-actuated, new mechanism guarantees a quick but gradual decelerating fluid delivery from full flow to zero, and vice versa. In either case action is the same. Time required for fully unloading or loading any type of multiple plunger reciprocating pump, horizontal or vertical, duplex, triplex or otherwise, does not exceed one-half of one revolution of the pump.



It is claimed that it provides positive synchronization of action in loading and unloading regardless of point in the pump revolution at which control functions. Individual cylinders load and unload in sequence on suction stroke, action starting with any cylinder, with consequent elimination of shock.

Electric Sander Design Facilitates Speed Change

■ Chicago Pneumatic Tool Co., 6 East Forty-fourth street, New York, has placed on the market a 2-speed sander with finger-tip gear-shifting. Instead of a separate gear-shift lever and a starting switch, there is located in the switch handle one plain-

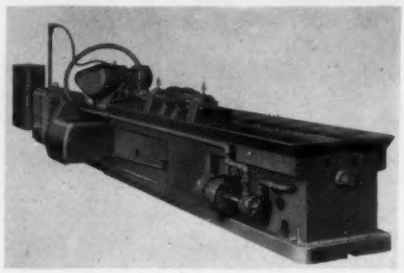
ly marked button for each speed. Two corresponding sets of gears are always in mesh with the driving pinion, and when the selected button is pressed, speed is changed electrically without loss of power and efficiency.

The standard model, No. 940-TAS, was developed for automotive and industrial use and is obtainable in 7 and 9-inch sizes. A heavy duty model, No. 951-TAS is identical in design and operation, but is higher powered for continuous production service under severe conditions.

Boring and Honing Unit Has Hydraulic Feeds

■ W. F. and John Barnes Co., Rockford, Ill., has added to its line a horizontal machine capable of both boring and honing cylinders in a wide range of diameters and lengths. This unit is said to have many applications in industries manufacturing airplane parts, hydraulic cylinders, air compressors, bearings, oil well tubing, cylinders for combustion engines, etc.

Head of machine is designed to use Micromatic hydraulically controlled hones. With a reciprocating feed of 35 to 60 feet per minute, used in honing, friction on the way surface is reduced by carrying the head on ball bearings. Head housing is light aluminum alloy. All



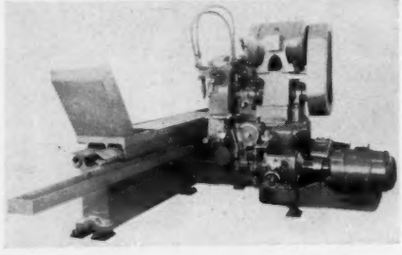
gears are hardened and mounted on splined shafts. A wide combination of head feeds for boring and honing is made possible by a hydraulic unit. Jogging of the honing stroke can be accomplished at any point within a predetermined stroke, facilitating removal of taper from cylinder bores.

Head feed is entirely independent of spindle speeds. Boring feeds vary from approximately 0.062-inch to 12 inches per minute, obtained by means of a hand adjusted dial control. Rapid traverse for boring is 30 feet per minute, and honing feed is adjustable between 35 and 60 feet per minute, which produced a cross hatch range of 30 to 45 degrees. Spindle speeds range from 66 to 600 revolutions per minute.

One-Position Operation Is Feature of Grinder

■ Bridgeport Safety Emery Wheel Co., Bridgeport, Conn., has placed on the market an improved face grinder. Machine can be operated entirely from one position, from which the operator can readily see the work as it passes to and fro after leaving the grinding wheel. Controls are at his right hand.

Shipper dogs controlling length of carriage travel and reversal of the direction of carriage travel are on a dial at the operator's position. Speed control is accomplished by an Oilgear pump. Segmental grinding wheel has blocks of such a shape that a shearing cut is obtained. Heavy spindle is equipped with Timken bearings. V and flat ways have forced feed lubrication.



Present Users Proved the Point

They never shake loose!

Fig. 1645 Pat. App'd For

UNBRAKO

Proved conclusively that the "UNBRAKO" Set Screw cannot loosen up in service . . . that the ingenious knurling around the cup point locks the screw securely when it's merely tightened in the ordinary way. Proved: "We've got something here!"

SELF-LOCKING HOLLOW SET SCREWS • Knurled Points •

To avert accidents and prevent breakdowns caused by set screws loosening up, you should, by all means, use the new "UNBRAKO" Set Screws with the Self-Locking Knurled Point. Once set up, it cannot fail to hold, yet it can be removed for adjustments and reused again and again.

It's a real answer to breakdown problems . . . proved by usage in many different plants and under varied conditions.

Fig. 1646 Pat. App. for

Knurled Point on the

UNBRAKO

Self Locking Square-Head Set Screw, too!

The Square-Head Set Screws used and liked by industry for years also can be had now with the automatic self-locking feature provided by the knurled cup points. And, like the Knurled Point Set Screw, they hold tight—yet are easily removed with ordinary tools, and used over and over again.

Get Bulletin!

And, that is why we say you're passing up a good bet if you fail to get the "UNBRAKO" samples and detailed information that are yours freely for the asking. The coupon below brings them to you; rip it out and mail it NOW!

STANDARD PRESSED STEEL CO.

BRANCHES BOSTON DETROIT INDIANAPOLIS

JENKINTOWN, PENNA.

Box 579

BRANCHES CHICAGO ST. LOUIS SAN FRANCISCO

Send me samples and all the facts about

☐ "UNBRAKO" Self-Locking Hollow Set Screws.

☐ "UNBRAKO" Self-Locking Square-Head Set Screws.

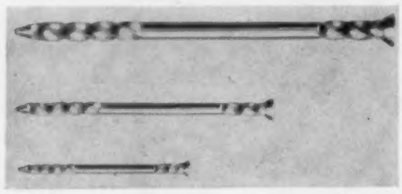
Name ..... Title .....

Company .....

Address .....

NEW METAL PRODUCTS

■ Double Grip spikes, that lock themselves in the wood into which they are driven, have been developed



by Pittsburgh Screw & Bolt Corp., Pittsburgh.

Spike is designed with a spiral neck and foot, mid-section being left smooth to facilitate both driving and removal. Upper spiral is synchronized with the lower so that rupture of the wood fibers is kept at a minimum. When driven into wood to the spike's full length, the two spiraled sections form a double lock, giving the spike good gripping and holding power. The heavy head of this spike is said to be a definite improvement over the ordinary flat type head. It is capable of withstanding driving pressure and will not turn over because of a misplaced blow.

■ A small, compact aluminum utility ladder that weighs only 5½ pounds and yet enables a person of average height to reach as high as 8 feet from the floor, has been introduced by Aluminum Ladder Co., Tarentum, Pa.

Ladder is constructed of Alcoa 51 SI alloy, which has a tensile strength of 48,000 pounds per square inch. Riveting is used throughout to give this ladder uniform strength and rigidity. Because of its lightness and strength this new unit is especially suitable for use in offices,

vaults, stores and other places where objects are stored on high shelves. It may be stored out of the way under tables or counters when not in use.

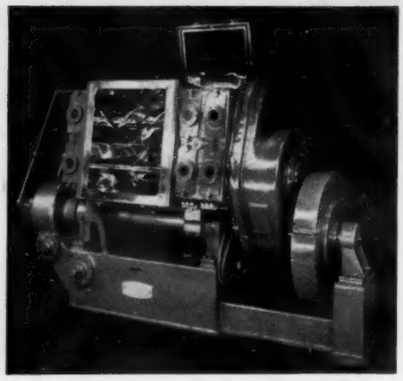
■ Replacing the 25 and 50-pound kegs formerly used for shipping their line of abrasives, Norton Co., Worcester, Mass., has adopted the use of metal containers shown in accompanying illustration. Attractively lithographed in blue and buff, these containers feature a sealing ring which protects abrasives against leakage or the entrance of moisture. At the customer's plant only a screw driver is necessary to remove the ring, and the cover completely closes the container when it

is replaced, effectively keeping out dust and dirt until all the contents has been used.

■ Telescopic gymnasium bleachers in wall-mounted and portable models are an interesting addition to the line of Fred Medart Co., St. Louis. Plank seats and footboards are mounted on individual steel trucks, arranged with slides which permit trucks to telescope. Thus seats occupy a space only 32 inches deep when not in use. Extended depth is approximately 22 inches per tier. Trucks are locked in extended or closed positions, and are mounted on rollers which support the seats when empty. When loaded, trucks rest directly on the floor.

Standard construction permits any height up to 9 tiers, and special units are as high as 12 tiers. Each unit is 14 feet long. Trucks are built up in units from formed channel and plate construction; both riveting and arc and spot welding are used in fabrication.

■ Designed for use in the processing of plastic compounds, inks, paints, phenol and urea resin compounds, a single packing gland vacuum mixer recently developed by Read Machinery Co., York, Pa., is

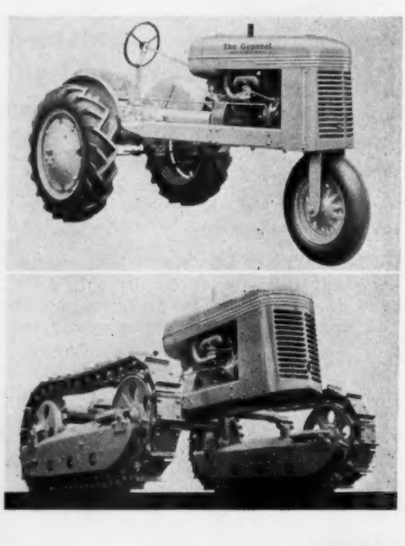


built with stainless steel bowl, arms and shafts highly polished to a mirror finish. Vapor cover also is stainless steel and is built with a double compartment and inner lining that will maintain the same temperature as the mix, eliminating radiation.

Mixer operates under full vacuum to enable evaporation of moisture or solvents at temperatures below their boiling points. Sight glasses on both chambers and the gear box permit continual inspection at these points.

■ Three low-priced, lightweight agricultural tractors were added this month to the line of Cleveland Tractor Co., Cleveland. One of these, known as the General, is the first wheel model made by this company. It is a 2200-pound tractor of the tricycle type, powered by a 4-cylinder Hercules engine and designed to pull one 16-inch plow. Its high-cleated, water filled tires are said to give this unit excellent pulling power in all types of soil. Price is $595.

The other two models presented are crawler tractors, 42 and 68 inches wide. These each weigh about 3100 pounds and are equipped with the same power unit as the wheel model. Prices are $875 to $895, respectively, f.o.b., Cleveland.



Combine Wood and Steel In Arc-Welded Frames

(*Concluded from Page* 52)

tening for wood trim and nailing strips for finish floors.

Other frames require a lot of field work to brace the structure temporarily during the erection. The frame described here does not require temporary bracing, the connections keeping the frame true and plumb. Also furnished as part of the frame proper are all necessary requirements for fastening of windows and doors, flooring, plaster grounds, interior trim, insulation, etc.

Apartment house construction is perhaps the largest field for a steel frame construction of the type described here. In apartment house construction the work is much simpler, as usually the roof construction is flat so hip and valley work is eliminated. Also the steel may replace masonry to produce a combined wall and floor construction at a lower price. Thus a fire resisting structure can be built for the same cost, or less, as a wall bearing type having wood floor joists and wood partitions and no fireproof features.

Field Is Extensive

This field appears of considerable magnitude and will doubtless become larger as many workers will eventually be housed in multiple dwellings, single houses being beyond their earning capacity.

Further, what wood is used is pretreated to eliminate shrinkage. This elimination of shrinkage will allow the use of a manufactured plaster board erected so no cracking of plaster occurs, giving a wall superior to a lath and plaster wall. Plastering will not be necessary, so the time required to construct a building will be reduced by as much as 20 per cent. Such elimination of plaster work has been worked out and approved by some of the leading architects in the country.

The following areas are from the plans of a large three and four story apartment for erection under F.H.A. insurance requirements in northern New Jersey: Wall area less window surface, 80,620 square feet; floor area, 101,680 square feet. Costs compare: Exterior wall saving per square foot, $1.19—.91, or $.28 and Floor area additional cost, $.64—.48, or $.16. This makes a saving of 80,620 x .28, or $22,573.60 and an extra cost of 101,680 x .16, or $16,-268.80 which results in a net saving of $6,304.80.

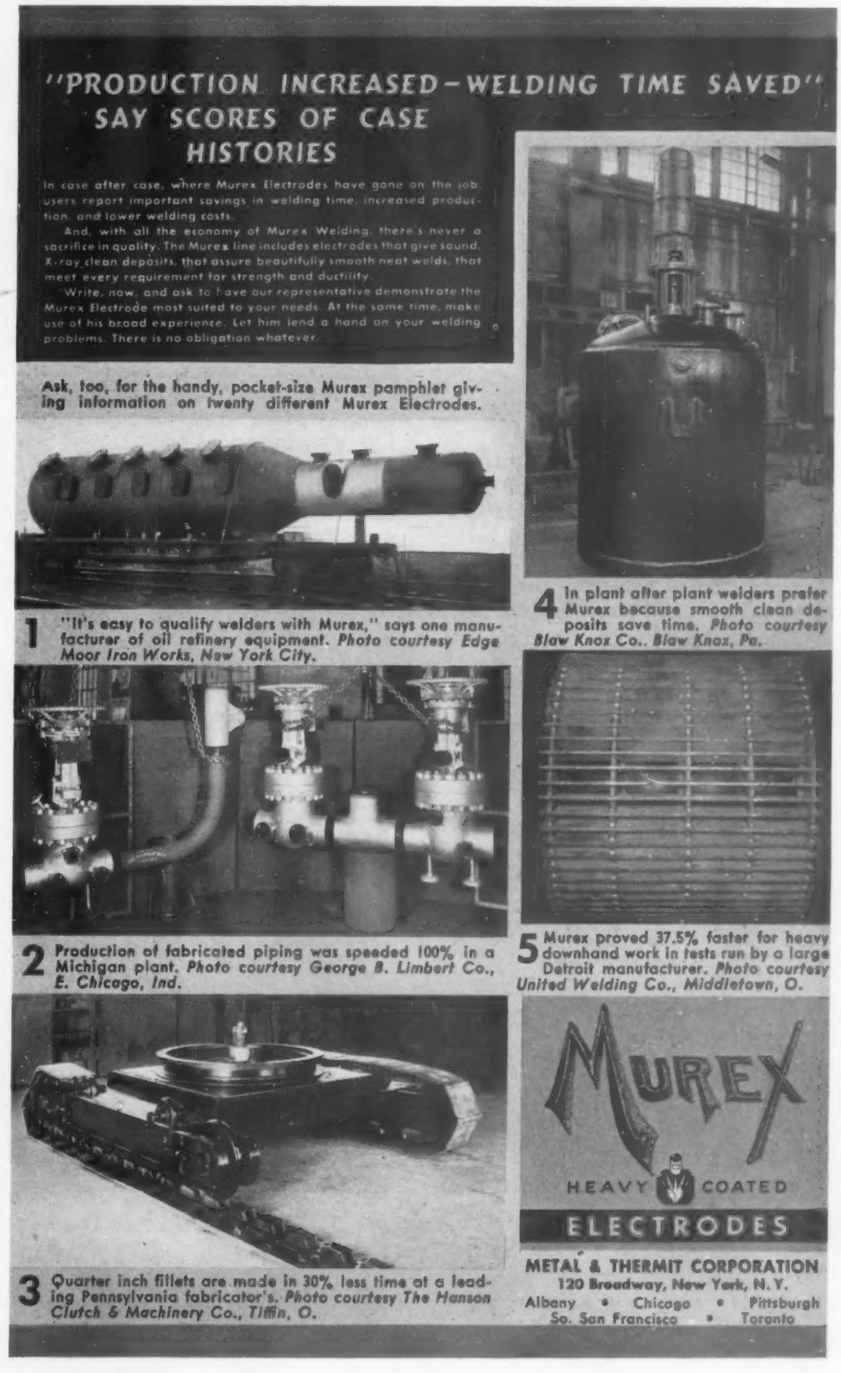
Thus a fireproof apartment is built for $6,304.80 less than it would cost to erect it with nonfireproof construction. Also it is an insulated building and so requires 20 per cent less heating equipment. Arc welding has made this possible.

New Fastening Permits Noiseless Joining

■ A new fastening for structural steel connections, the "Rivet-Bolt", licensed for manufacture by Dardelet Threadlock Corp., 55 Liberty street, New York, is said to permit noiseless joining.

This fastening is carbon manganese steel having about 30 per cent higher physical values than common structural rivet material. It has a button head similar to that of a rivet, but is different in that it has a ribbed grip portion slightly larger in diameter than the hole in which it is to be driven. Grip lengths vary with the thickness of steel members. The rivet-bolt is driven into the hole with a 7 or 8-pound maul so as to produce a bound fit. Thread end is formed with a self-locking screw thread on which nut is turned and tightened.

Because of its locking qualities, this fastening is claimed to have advantages in aircraft, automobile and railroad equipment construction.


"PRODUCTION INCREASED—WELDING TIME SAVED"
SAY SCORES OF CASE HISTORIES
In case after case, where Murex Electrodes have gone on the job, users report important savings in welding time, increased production, and lower welding costs.
And, with all the economy of Murex Welding, there's never a sacrifice in quality. The Murex line includes electrodes that give sound, X-ray clean deposits, that assure beautifully smooth neat welds, that meet every requirement for strength and ductility.
Write, now, and ask to have our representative demonstrate the Murex Electrode most suited to your needs. At the same time, make use of his broad experience. Let him lend a hand on your welding problems. There is no obligation whatever.
Ask, too, for the handy, pocket-size Murex pamphlet giving information on twenty different Murex Electrodes.
1 "It's easy to qualify welders with Murex," says one manufacturer of oil refinery equipment. Photo courtesy Edge Moor Iron Works, New York City.
2 Production of fabricated piping was speeded 100% in a Michigan plant. Photo courtesy George B. Limbert Co., E. Chicago, Ind.
3 Quarter inch fillets are made in 30% less time at a leading Pennsylvania fabricator's. Photo courtesy The Hanson Clutch & Machinery Co., Tiffin, O.
4 In plant after plant welders prefer Murex because smooth clean deposits save time. Photo courtesy Blaw Knox Co., Blaw Knox, Pa.
5 Murex proved 37.5% faster for heavy downhand work in tests run by a large Detroit manufacturer. Photo courtesy United Welding Co., Middletown, O.
MUREX
HEAVY COATED
ELECTRODES
METAL & THERMIT CORPORATION
120 Broadway, New York, N. Y.
Albany • Chicago • Pittsburgh
So. San Francisco • Toronto

Conveyor Eases Handling Of Scrap in Foundry Yard

(*Concluded from Page* 57)

but with the conveyor moving the scrap mechanically toward the shears, the need of heavy manual lifting and tugging has been eliminated. Men operating the shears do not have to stoop over the scrap, since the height of conveyor has been fixed so that it practically feeds on a level with the cutting edges of the shears. All this means that the men can work a full 8-hour day with only about half the effort required under the old system of rehandling the scrap.

In addition, the conveyor has doubled the tonnage it was formerly possible to handle. Some types of scrap, such as arch bars, are now handled through the shears at the rate of 18 to 20 tons an hour. Lighter scrap, requiring more cutting is handled at the rate of possibly 8 to 10 tons per hour.

Operation of the conveyor is intermittent. It is equipped with an electric push button station at the shears, permitting the men to move the scrap forward an inch or a foot or two, as may be required in order to have a ready supply of scrap always close at hand for shearing.

The conveyor sprockets, chains, overlapping conveyor pans and conveyor supporting rollers all are made of cast manganese steel. Besides being nonmagnetic, this material has the advantages of being very strong and having great ability to resist abrasion. The chains, located underneath the conveyor pans at positions which break up the span of the pans, have no rollers. Instead, they are provided with broad sliding surfaces for movement over closely spaced, large diameter, manganese steel rollers supporting the carrying run. In the return run the ends of conveyor pans are supported on manganese steel rollers.

Having a steel foundry of their own, Dominion Foundries & Steel Ltd. supplied the castings for the manganese steel conveyor pans, chains, sprockets and rollers from Link-Belt patterns. The conveyor head shaft is driven from a 7½-horsepower electric motor through a herringbone-gear speed reducer and double-width roller chain drive.

•

Nickel-Clad Steel Bond Shows Unusual Strength

■ An interesting test investigating strength of the bond between nickel cladding and a steel base plate is reported in *Nickelsworth*, published by International Nickel Co., 67 Wall street, New York.

Illustration shows how bond strength test was carried out. A bar of nickel was arc welded, with a nickel electrode, to the nickel cladding, and in a similar manner a steel rod was joined to the steel side of the plate, using a steel electrode. Several such specimens were machined, as illustrated in the bottom drawing, to standard 0.505-inch diameter, and tensile tested on a tensile machine. Fractures occurred in the steel weld at unit stresses between

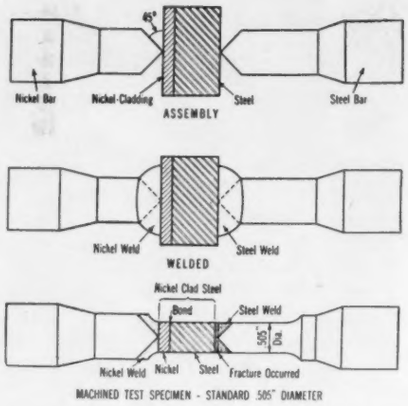


Diagram showing test specimen prepared for testing the strength of a nickel-clad steel bond

50,000 and 52,000 pounds per square inch. Neither the nickel weld nor the bond between cladding and steel base showed any signs of breaking after stresses were applied.

Tensile tests of the bimetallic plate showed that cladding increased the strength by about 10 per cent.

Blast Furnace Practice In American Stacks

■ *Blast Furnace Practice,* by Ralph H. Sweetser; 356 pages, 6 x 9 inches; cloth; published by McGraw-Hill Book Co., New York; supplied by STEEL, Cleveland, for $4; in Europe by Penton Publishing Co. Ltd., Caxton House, Westminster, London, S.W. 1.

A comprehensive, practical manual on all aspects of the production of pig iron, not only for those engaged in the field but also for all concerned in production and use of iron and steel products. It covers the blast furnace plant, equipment and raw materials, operating practice, character and utilization of products and by-products, theories of the process, commercial aspects and obsolescence, with emphasis on the operating man's viewpoint.

It is a condensed story of the making of pig iron in the modern iron blast furnace. For nearly a decade previous to 1938 no new blast furnace plants were built in the United States and there were some doubts as to whether the blast furnace was the best medium for getting metallic iron from its ores. This doubt is now past and the blast furnace process with its American practice is recognized as the most efficient and economical method of producing pig iron.

One aim of the author has been to call attention to the need of further research in the fundamentals of ferrous metallurgy and to point the way to co-operative investigation of the reactions inside the blast furnace.

"HERCULES" RED-STRAND REG. U. S. PAT. OFF. WIRE ROPE

Furnished in Flattened Strand, Round Strand, Preformed, Steel Clad and Non-Rotating constructions.

A GIANT in Strength and Endurance

MADE ONLY BY
A. Leschen & Sons Rope Co.
ESTABLISHED 1857
5909 KENNERLY AVENUE
ST. LOUIS, MO.

NEW YORK
CHICAGO
DENVER
SAN FRANCISCO
PORTLAND
SEATTLE

Demand Improves; Sentiment Better

Rise Accompanied By Price Extension; Output Gains

■ A MODERATE but diversified improvement in steel buying is accompanied by noticeable betterment in sentiment among consumers, as well as by a stronger tone in most scrap markets.

Steelmaking as yet has been affected only slightly by recent gains in demand. National average operations last week were up ½-point to 56½ per cent, compared with 30 per cent a year ago. Further gains are predicted in some districts for the near future.

Reaffirmation of current prices on second quarter business was more or less expected, consequently effect of the recently announced extension of quotations into the next period will be relatively moderate. However, the move will permit the release of some business held up awaiting the price decision, and in general is considered a favorable development.

Since producers express dissatisfaction with present prices on a number of products, it is regarded not unlikely an attempt will be made to institute higher quotations by third quarter in the event conditions appear to warrant such a stand.

Seasonal quickening is appearing in activity among some important steel consuming industries. Automobile assemblies last week increased more than 5000 units to stand 48 per cent higher than a year ago. Railroads are preparing for spring track work, the outstanding feature in this regard lately being the New York Central's order for 56,200 tons of rails, plus accessories.

Tin Plate Demand Heavier; Output Near 55 Per Cent

Tin plate demand gradually is improving, with prices again extended for only three months instead of through the season, as was the practice before this year. Tin plate production continues slightly below 55 per cent.

Improvement in building and engineering construction finds little reflection in structural shape and concrete reinforcing bar awards, but shipments against old orders continue an important support to steelmaking. Gains in residential building are accompanied by better activity among makers of domestic equipment.

Operations of farm equipment builders have increased moderately so far this year, but the industry is not counted on to exceed its 1938 steel requirements by any large margin.

Finished steel shipments by the United States Steel Corp. in February were influenced partly by the shorter month. Based on the number of working days the decrease from January was less than 7 per cent, compared with a 14 per cent reduction in the monthly total. The increase over February last year was nearly 43 per cent.

Large Steel Tonnage For Shipbuilding Is Pending

Shipbuilding is a promising source of business for eastern steelmakers, with a large tonnage pending for work already placed or in early prospect.

Increased automobile production is stimulating steel demand moderately, although sheet and strip purchases still are restricted somewhat by previous orders. Indicative of the general nature of the upturn in assemblies, most makers participated in last week's gain. General Motors increased output from 35,255 units to 36,165; Chrysler from 19,835 to 20,425; Ford from 15,400 to 16,200; and all others from 8215 to 11,305.

Steelmaking is tending upward in the majority of districts, last week's rise being retarded by declines of 2 points to 48 per cent at Pittsburgh and 12 points to 43 per cent at Cincinnati.

Chicago was up 1.5 points to 58, a new 1939 high. Other increases included 3 points to 40 in eastern Pennsylvania; 3 points to 74 at Wheeling; 1 point to 52 at Cleveland; 5 points to 65 in New England; 2.5 points to 57.5 at St. Louis; and 5 points to 52 at Youngstown. Unchanged districts were Buffalo at 32.5, Birmingham at 83 and Detroit at 76.

Scrap is stronger in most areas, and higher prices are believed imminent. Purchase of 400,000 tons for the European cartel is expected shortly. Meanwhile the scrap composite is unchanged at $14.96, while the finished steel composite remains $56.50.

COMPOSITE MARKET AVERAGES

	Mar. 11	Mar. 4	Feb. 25	One Month Ago Feb., 1939	Three Months Ago Dec., 1938	One Year Ago Mar., 1938	Five Years Ago Mar., 1934
Iron and Steel	$36.39	$36.38	$36.38	$36.37	$36.36	$38.80	$31.38
Finished Steel	56.50	56.50	56.50	56.50	56.50	61.70	51.10
Steelworks Scrap..	14.96	14.96	14.96	14.87	14.77	13.20	12.30

Iron and Steel Composite:—Pig iron, scrap, billets, sheet bars, wire rods, tin plate, wire, sheets, plates, shapes, bars, black pipe, rails, alloy steel, hot strip, and cast iron pipe at representative centers. Finished Steel Composite:—Plates, shapes, bars, hot strip, nails, tin plate, pipe. Steelworks Scrap Composite:—Heavy melting steel and compressed sheets.

COMPARISON OF PRICES

Representative Market Figures for Current Week; Average for Last Month, Three Months and One Year Ago

Finished Material

	March 11, 1939	Feb. 1939	Dec. 1938	March 1938
Steel bars, Pittsburgh	2.25c	2.25c	2.25c	2.45c
Steel bars, Chicago	2.25	2.25	2.25	2.50
Steel bars, Philadelphia	2.57	2.57	2.57	2.75
Iron bars, Terre Haute, Ind.	2.15	2.15	2.15	2.35
Shapes, Pittsburgh	2.10	2.10	2.10	2.25
Shapes, Philadelphia	2.215	2.215	2.215	2.465
Shapes, Chicago	2.10	2.10	2.10	2.30
Plates, Pittsburgh	2.10	2.10	2.10	2.25
Plates, Philadelphia	2.15	2.15	2.15	2.445
Plates, Chicago	2.10	2.10	2.10	2.30
Sheets, hot-rolled, Pittsburgh	2.15	2.15	2.15	2.40
Sheets, cold-rolled, Pittsburgh	3.20	3.20	3.20	3.45
Sheets, No. 24, galv., Pittsburgh	3.50	3.50	3.50	3.80
Sheets, hot-rolled, Gary	2.15	2.15	2.15	2.50
Sheets, cold-rolled, Gary	3.20	3.20	3.20	3.25
Sheets, No. 24, galv., Gary	3.50	3.50	3.50	3.90
Bright bess., basic wire, Pitts.	2.60	2.60	2.60	2.90
Tin plate, per base box, Pitts.	$5.00	$5.00	$5.00	$5.35
Wire nails, Pittsburgh	2.45	2.45	2.45	2.75

Semifinished Material

Sheet bars, Pittsburgh, Chicago	$34.00	$34.00	$34.00	$37.00
Slabs, Pittsburgh, Chicago	34.00	34.00	34.00	37.00
Rerolling billets, Pittsburgh	34.00	34.00	34.00	37.00
Wire rods, No. 5 to $\frac{9}{32}$-inch, Pitts.	43.00	43.00	43.00	47.00

Pig Iron

	March 11, 1939	Feb. 1939	Dec. 1938	March 1938
Bessemer, del. Pittsburgh	$22.34	$22.34	$22.34	$25.26
Basic, Valley	20.50	20.50	20.50	23.50
Basic, eastern, del. Philadelphia	22.34	22.34	22.34	25.34
No. 2 foundry, Pittsburgh	22.21	22.21	22.21	25.21
No. 2 foundry, Chicago	21.00	21.00	21.00	24.00
Southern No. 2, Birmingham	17.38	17.38	17.38	20.38
Southern No. 2, del. Cincinnati	20.89	20.89	20.89	23.89
No. 2X, del. Phila. (differ. av.)	23.215	23.215	23.215	26.215
Malleable, Valley	21.00	21.00	21.00	24.00
Malleable, Chicago	21.00	21.00	21.00	24.00
Lake Sup., charcoal, del. Chicago	28.34	28.34	28.34	30.24
Gray forge, del. Pittsburgh	21.17	21.17	21.17	24.17
Ferromanganese, del. Pittsburgh	85.27	85.27	97.77	107.49

Scrap

Heavy melting steel, Pittsburgh	$15.75	$15.65	$15.50	$13.65
Heavy melt. steel, No. 2, E. Pa.	13.25	13.25	13.20	12.75
Heavy melting steel, Chicago	14.25	14.00	13.85	12.20
Rails for rolling, Chicago	17.25	17.25	17.75	15.25
Railroad steel specialties, Chicago	16.25	16.00	16.05	14.25

Coke

Connellsville, furnace, ovens	$ 3.75	$3.75	$3.75	$4.25
Connellsville, foundry, ovens	5.00	5.00	5.00	5.25
Chicago, by-product fdry., del.	10.50	10.50	10.50	11.00

STEEL, IRON, RAW MATERIAL, FUEL AND METALS PRICES

Except when otherwise designated, prices are base, f.o.b. cars.

Sheet Steel

Hot Rolled

Pittsburgh	2.15c
Chicago, Gary	2.15c
Cleveland	2.15c
Detroit, del.	2.25c
Buffalo	2.15c
Sparrows Point, Md.	2.15c
New York, del.	2.39c
Philadelphia, del.	2.32c
Granite City, Ill.	2.25c
Middletown, O.	2.15c
Youngstown, O.	2.15c
Birmingham	2.15c
Pacific Coast points	2.65c

Cold Rolled

Pittsburgh	3.20c
Chicago, Gary	3.20c
Buffalo	3.20c
Cleveland	3.20c
Detroit, delivered	3.30c
Philadelphia, del.	3.52c
New York, del.	3.54c
Granite City, Ill.	3.30c
Middletown, O.	3.20c
Youngstown, O.	3.20c
Pacific Coast points	3.80c

Galvanized No. 24

Pittsburgh	3.50c
Chicago, Gary	3.50c
Buffalo	3.50c
Sparrows Point, Md.	3.50c
Philadelphia, del.	3.67c
New York, delivered	3.74c
Birmingham	3.50c
Granite City, Ill.	3.60c
Middletown, O.	3.50c
Youngstown, O.	3.50c
Pacific Coast points	4.00c

Black Plate, No. 29 and Lighter

Pittsburgh	3.05c
Chicago, Gary	3.05c
Granite City, Ill.	3.15c

Long Ternes No. 24 Unassorted

Pittsburgh, Gary	3.95c
Pacific Coast	4.65c

Enameling Sheets

	No. 10	No. 20
Pittsburgh	2.75c	3.35c
Chicago, Gary	2.75c	3.35c
Granite City, Ill.	2.85c	3.45c
Youngstown, O.	2.75c	3.35c
Cleveland	2.75c	3.35c
Middletown, O.	2.75c	3.35c
Pacific Coast	3.35c	3.95c

Corrosion and Heat-Resistant Alloys

Pittsburgh base, cents per lb.

Chrome-Nickel

	No. 302	No. 304
Bars	24.00	25.00
Plates	27.00	29.00
Sheets	34.00	36.00
Hot strip	21.50	23.50
Cold strip	28.00	30.00

Straight Chromes

	No. 410	No. 430	No. 442	No. 446
Bars	18.50	19.00	22.50	27.50
Plates	21.50	22.00	25.50	30.50
Sheets	26.50	29.00	32.50	36.50
Hot strip	17.00	17.50	23.00	28.00
Cold stp.	22.00	22.50	28.50	36.50

Steel Plate

Pittsburgh	2.10c
New York, del.	2.29c
Philadelphia, del.	2.15c
Boston, delivered	2.42c
Buffalo, delivered	2.33c
Chicago or Gary	2.10c
Cleveland	2.10c
Birmingham	2.10c
Coatesville, base	2.10c
Sparrows Point, base	2.10c
Claymont, del.	2.10c
Youngstown	2.10c
Gulf ports	2.45c
Pacific Coast points	2.60c

Steel Floor Plates

Chicago	3.35c
Gulf ports	3.70c
Pacific Coast ports	3.95c
Pittsburgh	3.35c

Standard Shapes

Pittsburgh	2.10c
Philadelphia, del.	2.21½c
New York, del.	2.27c
Boston, delivered	2.41c
Bethlehem	2.10c
Chicago	2.10c
Cleveland, del.	2.30c
Buffalo	2.10c
Gulf ports	2.45c
Birmingham	2.10c
St. Louis, del.	2.34c
Pacific Coast points	2.70c

Tin and Terne Plate

Tin Plate, Coke (base box)

Pittsburgh, Gary, Chicago	$5.00
Granite City, Ill.	5.10

Mfg. Terne Plate (base box)

Pittsburgh, Gary, Chicago	$4.30
Granite City, Ill.	4.40

Bars

Soft Steel

(Base, 3 to 25 tons)

Pittsburgh	2.25c
Chicago or Gary	2.25c
Duluth	2.35c
Birmingham	2.25c
Cleveland	2.25c
Buffalo	2.25c
Detroit, delivered	2.35c
Philadelphia, del.	2.57c
Boston, delivered	2.62c
New York, del.	2.59c
Gulf ports	2.60c
Pacific Coast points	2.85c

Rail Steel

To Manufacturing Trade

Pittsburgh	2.10c
Chicago or Gary	2.10c
Detroit, delivered	2.20c
Cleveland	2.10c

Buffalo	2.10c
Birmingham	2.10c
Gulf ports	2.45c
Pacific coast points	2.70c
Iron	
Chicago, Terre Haute	2.15c
Philadelphia	2.47c
Pittsburgh, refined	3.50-8.00c
Reinforcing	
New billet, straight lengths, quoted by distributors	
Chicago, Gary, Buffalo Cleve., Birm., Young., Sparrows Pt., Pitts.	2.05c
Detroit, delivered	2.15c
Gulf ports	2.40c
Pacific coast ports	2.50c
Philadelphia, del.	2.22c
Rail steel, straight lengths, quoted by distributors	
Pittsburgh, Gary, Chicago, Buffalo, Cleveland, Birmingham	1.90c
Detroit, delivered	2.00c
Gulf ports	2.25c
Pacific Coast	2.35c

Wire Products

Pitts.-Cleve.-Chicago-Birm. base per 100 lb. keg in carloads

Standard wire nails	$2.45
Cement coated nails	$2.45
(Per pound)	
Polished staples	3.15c
Galv. fence staples	3.40c
Galv. barbed wire, standard 12½ gage two-point hog, 80-rod spool $2.80; two-point cattle, 80-rod spool	$2.62
Annealed fence wire	2.95c
Galv. fence wire	3.35c
Woven wire fencing (base C. L. column)	67.00
Single loop bale ties, (base C. L. column)	56.00
To Manufacturing Trade	
Base, Pitts. - Cleve. - Chicago-Birmingham (except spring wire)	
Bright bess., basic wire	2.60c
Galvanized wire	2.65c
Spring wire	3.20c

Worcester, Mass., $2 higher on bright basic and spring wire.

Cut nails, C. L. Pitts. (10% disc. on all extras)	$3.60

Cold-Finished Bars

	Carbon	Alloy
Pittsburgh	2.70c	3.40c
Chicago	2.70c	3.40c
Gary, Ind.	2.70c	3.40c
Detroit	2.75c	*3.50c
Cleveland	2.70c	3.40c
Buffalo	2.70c	3.40c

*Delivered.

Alloy Bars (Hot)

(*Base, 3 to 25 tons*)

Pittsburgh, Buffalo, Chicago, Massillon, Canton, Bethlehem	2.80c
Detroit, delivered	2.90c

S.A.E.	Alloy Diff.	S.A.E.	Alloy Diff.
2000	0.35	3100	0.70
2100	0.75	3200	1.35
2300	1.55	3300	3.80
2500	2.25	3400	3.20

4100 0.15 to 0.25 Mo. 150-4600 0.20 to 0.30 Mo. 1.50-2.00 Ni.	1.10
5100 0.80-1.10 Cr.	0.45
5100 Cr. spring flats	0.15
6100 bars	1.20
6100 spring flats	0.85
Cr. N., Van.	1.50
Carbon Van.	0.85
9200 spring flats	0.15
9200 spring rounds, squares	0.40

Electric furnace up 50 cents.

Piling

Pitts., Chgo., Buffalo	2.40c
Gulf ports	2.75c

Strip and Hoops

(*Base, hot-rolled, 1 to 25 tons; cold-rolled, 3 to 25 tons*)

Hot Strip, 12-inch and less	
Pittsburgh, Chicago, Gary, Cleveland, Youngstown, Middletown, Birmingham	2.15c
Detroit, del.	2.25c
Philadelphia, del.	2.47c
New York, del.	2.51c
Cooperage hoop, Youngs., Pitts., Chicago, Birm.	2.25c
Cold strip, 0.25 carbon and under, Pittsburgh, Cleveland, Youngstown	2.95c
Chicago	3.05c
Detroit, del.	3.05c
Worcester, Mass.	3.15c

Carbon	Cleve. Pitts.
0.26—0.50	2.95c
0.51—0.75	4.30c
0.76—1.00	6.15c
Over 1.00	8.35c

Worcester, Mass $4 higher.

Commodity Cold-Rolled Strip	
Pitts.-Cleve.-Youngstown	3.10c
Detroit, del.	3.20c
Worcester, Mass.	3.50c

Lamp stock up 10 cents.

Rails, Fastenings

(*Gross Tons*)

Standard rails, mill	$40.00
Relay rails, Pittsburgh 20—100 lbs.	32.50-35.50
Light rails, billet qual., Pitts., Chicago, B'ham.	$40.00
Do., rerolling quality	39.00
Cents per pound	
Angle bars, billet, mills	2.70c
Do., axle steel	2.35c
Spikes, R. R. base	3.00c
Track bolts, base	4.15c
Car axles forged, Pitts., Chicago, Birmingham	3.15c
Tie plates, base	2.15c

Base, light rails 25 to 60 lbs., 20 lbs., up $2; 16 lbs. up $4; 12 lbs. up $8; 8 lbs. up $10. Base railroad spikes 200 kegs or more; base plates 20 tons.

Bolts and Nuts

Pittsburgh, Cleveland, Birmingham, Chicago. Discounts to legitimate trade as per Dec. 1, 1932, lists, carloads 5% up; full containers additional 10%.

Carriage and Machine	
½ x 6 and smaller	65-5-5 off
Do. larger, to 1-in.	60-10-5 off
Do. 1⅛ and larger	60-5-5 off
Tire bolts	50-5 off
Stove Bolts	

In packages with nuts attached 75 off; in packages with nuts separate 75-12½ off; bulk 85 off on 15,000 of 3-inch and shorter, or 5000 over 3-inch.

Step bolts	50-10-5-5 off
Elevator bolts	50-10-5-5 off
Plow bolts	65-5-5 off

Nuts		
Semifinished hex.	U.S.S.	S.A.E.
6-inch and less	65-5	70
⅞—1-inch	60-10	65
1⅛ and larger	60-5	60-5

Hexagon Cap Screws	
Milled	50-10 off
Upset, 1-in., smaller	65-10 off
Square Head Set Screws	
Upset, 1-in., smaller	73-10 off
Headless set screws	62-10 off

Rivets, Washers

Structural, Pittsburgh, Cleveland, Chicago	3.40c
⅞-inch and smaller, Pitts., Chi., Cleve.	65-10 off
Wrought washers, Pitts., Chi., Phila., to jobbers and large nut, bolt mfrs. l.c.l. $5.40; c.l. $5.75 off	

Welded Iron, Steel Pipe

Base discounts on steel pipe. Pitts., Lorain, O., to consumers in carloads. Gary, Ind., 2 points less on lap weld, 1 point less on butt weld. Chicago delivery 2½ and 1½ less, respectively. Wrought pipe, Pittsburgh base.

Butt Weld

Steel In.	Blk.	Galv.
⅛	63½	54
¼	66½	58
1—3	68½	60½
Iron		
¼	30	13
1—1¼	34	19
1½	38	21½
2	37½	21

Lap Weld

Steel		
2	61	52½
2½—3	64	55½
3½—6	66	57½
7 and 8	65	55½
9 and 10	64½	55
11 and 12	63½	54
Iron		
2	30½	15
2½—3½	31½	17½
4	33½	21
4½—8	32½	20
9—12	28½	15

Line Pipe

Steel	
1 to 3, butt weld	67½
2, lap weld	60
2½ to 3, lap weld	63
3½ to 6, lap weld	65
7 and 8, lap weld	64
10-inch lap weld	63½
12-inch, lap weld	62½

Iron	Blk.	Galv.
¾ butt weld	25	7
1 and 1¼ butt weld	29	13
1½ butt weld	33	15½
2 butt weld	32½	15
1½ lap weld	23½	7
2 lap weld	25½	9
2½ to 3½ lap weld	26½	11½
4 lap weld	28½	15
4½ to 8 lap weld	27½	14
9 to 12 lap weld	23½	9

Boiler Tubes

Carloads minimum wall seamless steel boiler tubes, cut lengths 4 to 24 feet; f.o.b. Pittsburgh, base price per 100 feet subject to usual extras.

Lap Welded

Sizes	Gage	Steel	Charcoal Iron
1½" O. D.	13	$ 9.72	$23.71
1¾" O. D.	13	11.06	22.93
2" O. D.	13	12.38	19.35
2¼" O. D.	13	13.79	21.68
2¼" O. D.	12	15.16	.....
2½" O. D.	12	16.58	26.57
2¾" O. D.	12	17.54	29.00
3" O. D.	12	18.35	31.36
3½" O. D.	11	23.15	39.81
4" O. D.	10	28.66	49.90
5" O. D.	9	44.25	73.93
6" O. D.	7	68.14	.....

Seamless

Sizes	Gage	Hot Rolled	Cold Drawn
1" O. D.	13	$ 7.82	$ 9.01
1¼" O. D.	13	9.26	10.67
1½" O. D.	13	10.23	11.79
1¾" O. D.	13	11.64	13.42
2" O. D.	13	13.04	15.03
2¼" O. D.	13	14.54	16.76
2¼" O. D.	12	16.01	18.45
2½" O. D.	12	17.54	20.21
2¾" O. D.	12	18.59	21.42
3" O. D.	12	19.50	22.48
3½" O. D.	11	24.62	28.37
4" O. D.	10	30.54	35.20
4½" O. D.	10	37.35	43.04
5" O. D.	9	46.87	54.01
6" O. D.	7	71.96	82.93

Cast Iron Pipe

Class B Pipe—Per Net Ton

6-in., & over, Birm.	$42.00-43.00
4-in., Birmingham	45.00-46.00
4-in., Chicago	53.80-54.80
6-in. & over, Chicago	50.80-51.80
6-in. & over, east fdy.	46.00
Do., 4-in.	49.00

Class A Pipe $3 over Class B

Stnd. fitgs., Birm., base $100.00

Semifinished Steel

Rerolling Billets, Slabs

(*Gross Tons*)

Pittsburgh, Chicago, Gary, Cleve., Buffalo, Young., Birm., Sparrows Point	$34.00
Duluth (billets)	36.00
Detroit, delivered	36.00
Forging Quality Billets	
6 x 6 to 9 x 9-in., base	
Pitts., Chicago, Buffalo	40.00
Duluth	42.00
Sheet Bars	
Pitts., Cleveland, Young., Sparrows Point, Buffalo, Canton, Chicago	34.00
Detroit, delivered	36.00
Wire Rods	
Pitts., Cleveland, Chicago, Birmingham No. 5 to ⅝-inch incl.	43.00
Do., over ⅝ to 11/32-in. incl.	48.00

Worcester up $2; Galveston up $6; Pacific Coast up $9.

Skelp	
Pitts., Chi., Young., Buff., Coatesville, Sparrows Pt.	1.90c

Coke

Price Per Net Ton

Beehive Ovens	
Connellsville, fur.	$3.75
Connellsville, fdry.	4.75- 5.50
Connell. prem. fdry.	5.75- 6.25
New River fdry.	6.50- 6.75
Wise county fdry.	5.50- 5.75
Wise county fur.	4.50- 4.75
By-Product Foundry	
Newark, N. J., del.	10.88-11.35
Chi., ov., outside del.	9.75
Chicago, del.	10.50
Milwaukee, ovens	10.50
New England, del.	12.50
St. Louis, del.	11.00-11.50
Birmingham, ovens	7.00
Indianapolis, del.	10.00
Cincinnati, del.	9.75
Cleveland, del.	10.30
Buffalo, del.	10.50
Detroit, del.	10.25
Philadelphia, del.	10.65

Coke By-Products

Spot, gal., freight allowed east of Omaha

Pure and 90% benzol	16.00c
Toluol, two degree	22.00c
Solvent naphtha	26.00c
Industrial xylol	26.00c

Per lb. f.o.b. Frankford and St. Louis

Phenol (200 lb. drums)	16.25c
Do. (450 lbs.)	15.25c
Eastern Plants, per lb.	
Naphthalene flakes, balls, bbls. to jobbers	5.75c
Per ton, bulk, f.o.b. port	
Sulphate of ammonia	$28.00

Pig Iron

Delivered prices include switching charges only as noted. No. 2 foundry is 1.75-2.25 sil.; 25c diff. for each 0.25 sil. above 2.25 sil.; 50c diff. below 1.75 sil. Gross tons.

Basing Points:	No. 2 Fdry.	Malleable	Basic	Bessemer
Bethlehem, Pa.	$22.00	$22.50	$21.50	$23.00
Birdsboro, Pa.	22.00	22.50	21.50	23.00
Birmingham, Ala.‡	17.38	.....	16.38	22.00
Buffalo	21.00	21.50	20.00	22.00
Chicago	21.00	21.00	20.50	21.50
Cleveland	21.00	21.00	20.50	21.50
Detroit	21.00	21.00	20.50	21.50
Duluth	21.50	21.50	.....	22.00
Erie, Pa.	21.00	21.50	20.50	22.00
Everett, Mass.	22.00	22.50	21.50	23.00
Granite City, Ill.	21.00	21.00	20.50	21.50
Hamilton, O.	21.00	21.00	20.50	.....
Neville Island, Pa.	21.00	21.00	20.50	21.50
Provo, Utah	19.00	.....	.....	.....
Sharpsville, Pa.	21.00	21.00	20.50	21.50
Sparrow's Point, Md.	22.00	.....	21.50	.....
Swedeland, Pa.	22.00	22.50	21.50	23.00
Toledo, O.	21.00	21.00	20.50	21.50
Youngstown, O.	21.00	21.00	20.50	21.50

‡Subject to 38 cents deduction for 0.70 per cent phosphorus or higher.

Delivered from Basing Points:				
Akron, O., from Cleveland	22.39	22.39	21.89	22.89
Baltimore from Birmingham	22.78	.....	21.66	.....
Boston from Birmingham	22.12	.....	.....	.....
Boston from Everett, Mass.	22.50	23.00	22.00	23.50
Boston from Buffalo	22.50	23.00	22.00	23.50
Brooklyn, N. Y., from Bethlehem	24.50	25.00	.....	.....
Canton, O., from Cleveland	22.39	22.39	21.89	22.89
Chicago from Birminghom	†21.22	.....	.....	.....
Cincinnati from Hamilton, O.	21.24	22.11	21.61	.....
Cincinnati from Birmingham	21.06	.....	20.06	.....
Cleveland from Birmingham	21.32	.....	20.82	.....
Mansfield, O., from Toledo, O.	22.94	22.94	22.44	22.44
Milwaukee from Chicago	22.10	22.10	21.60	22.60
Muskegon, Mich., from Chicago, Toledo or Detroit	24.19	24.19	23.69	24.69
Newark, N. J., from Birmingham	23.15	.....	.....	.....
Newark, N. J., from Bethlehem	23.53	24.03	.....	.....
Philadelphia from Birmingham	22.46	.....	21.96	.....
Philadelphia from Swedeland, Pa.	22.84	23.34	22.34	.....
Pittsburgh district from Neville Island	Neville base, plus 69c, 84c, and $1.24 freight.			
Saginaw, Mich., from Detroit	23.45	23.45	22.95	22.95

	No. 2 Fdry.	Malleable	Basic	Bessemer
St. Louis, northern	21.50	21.50	21.00	.....
St. Louis from Birmingham	†21.12	.....	20.62	.....
St. Paul from Duluth	23.63	23.63	.....	24.13

†Over 0.70 phos.

Low Phos.

Basing Points: Birdsboro and Steelton, Pa., and Standish, N. Y., $26.50, base; $27.74 delivered Philadelphia.

Gray Forge		Charcoal	
Valley furnace	$20.50	Lake Superior fur.	$25.00
Pitts. dist. fur.	20.50	do., del Chicago	28.34
		Lyles, Tenn.	23.50

†Silvery

Jackson county, O., base: 6-6.50 per cent $25.50; 6.51-7—$26.00; 7-7.50—$26.50; 7.51-8—$27.00; 8-8.50—$27.50; 8.51-9—$28.00; 9-9.50—$28.50; Buffalo, $1.25 higher.

Bessemer Ferrosilicon†

Jackson county, O., base; Prices are the same as for silveries, plus $1 a ton.

†The lower all-rail delivered price from Jackson, O., or Buffalo is quoted with freight allowed.

Manganese differentials in silvery iron and ferrosilicon, 2 to 3%, $1 per ton add. Each unit over 3%, add $1 per ton.

Refractories

Per 1000 f.o.b. Works, Net Prices

Fire Clay Brick

Super Quality

Pa., Mo., Ky.	$60.80

First Quality

Pa., Ill., Md., Mo., Ky.	47.50
Alabama, Georgia	47.50
New Jersey	52.50

Second Quality

Pa., Ill., Ky., Md., Mo.	42.75
Georgia, Alabama	34.20
New Jersey	49.00

Ohio

First quality	39.90
Intermediate	36.10
Second quality	31.35

Malleable Bung Brick

All bases	$56.05

Silica Brick

Pennsylvania	$40.00
Joliet, E. Chicago	49.00
Birmingham, Ala.	40.00

Ladle Brick

(Pa., O., W. Va., Mo.)

Dry press	$28.00
Wire cut	$26.00

Magnesite

Imported dead - burned grains, net ton f.o.b. Chester, Pa., and Baltimore bases (bags)	$45.00
Do. domestic	40.00
Do., f.o.b. Chewelah, Wash., net ton, bulk	22.00
net ton, bags	26.00
Quickest magnesite grains, f.o.b. Chewelah, Wash., net ton, bulk	22.00

Basic Brick

Net ton, f.o.b. Baltimore, Plymouth Meeting, Chester, Pa.

Chrome brick	$47.00
Chem. bonded chrome	47.00
Magnesite brick	67.00
Chem. bonded magnesite	57.00

Fluorspar, 85-5

Washed gravel, duty paid, tide, net ton	$21.50
Washed gravel, f.o.b. Ill., Ky., net ton, carloads, all rail $20, barge	$22.00
No. 2 lump	22.00-23.00

Ferroalloy Prices

Ferromanganese, 78-82%, tidewater, duty pd. $80.00
Do., del. Pittsburgh 85.27

Spiegeleisen, 19-21% dom. Palmerton, Pa., spot 28.00
Do., 26-28%, Palmerton 33.00

Ferrosilicon, 50% freight allowed, c.l. 69.50
Do., ton lot 80.50
Do., 75 per cent 126.00
Spot, $5 a ton higher.

Silicoman, 2½ carbon 88.00
2% carbon, 93.00; 1% 103.00
Contract ton price $11 higher; spot $5 over contract.

Ferrotungsten, stand., lb. con. del. cars 1.65-1.70

Ferrovanadium, 35 to 40%, lb., cont. 2.70-2.80-2.90

Ferrophosphorus, gr. ton, c.l., 17-18% Rockdale, Tenn., basis, 18%, $3 unitage, 58.50; electrolytic, per ton, c. l., 23-26% f.o.b. Monsanto, Tenn., 24% $3 unitage 75.00

Ferrochrome, 66-70 chromium, 4-6 carbon, cts. lb., contained cr., del. carlots 10.50c
Do., ton lots 11.25c
Do., less-ton lots 11.50c

67-72% carloads, 2% carbon, per lb. contained chrome 16.50c
Do., ton lots 17.25c
Do., less-ton lots 17.75c

	Carloads	Ton lots	Less ton
2% carb.	16.50c	17.25c	17.50c
1% carb.	17.50c	18.25c	18.50c
0.10% carb.	18.50c	19.25c	19.50c
0.20% carb.	19.50c	20.25c	20.50c

Spot ¼c higher

Ferromolybdenum, 55-65% molyb. cont., f.o.b. mill, lb. 0.95

Calcium molybdate, lb. molyb. cont., f.o.b. mill 0.80

Ferrotitanium, 40-45%, lb., con. ti., f.o.b. Niagara Falls, ton lots $1.23
Do., less-ton lots 1.25
20-25% carbon, 0.10 max., ton lots, lb. 1.35
Do, less-ton lots 1.40
Spot 5c higher

Ferrocolumbium, 50-60%, contract, lb. con. col., f.o.b. Niagara Falls $2.25
Do, less-ton lots 2.30
Spot is 10c higher

Technical molybdenum trioxide, 53 to 60% molybdenum, lb. molyb. cont., f.o.b. mill 0.80

Ferro-carbon-titanium, 15-18%, ti., 6-8% carb., carlots, contr., net ton $142.50
Do, spot 145.00
Do, contract, ton lots 145.00
Do, spot, ton lots 150.00

15-18% ti., 3-5% carbon, carlots, contr., net ton 157.50
Do, spot 160.00
Do, contract, ton lots. 160.00
Do, spot, ton lots 165.00

Alsifer, contract carlots, f.o.b. Niagara Falls, lb. 7.50c
Do, ton lots 8.00c
Do, less-ton lots 8.50c
Spot ½c lb. higher

Chromium Briquets, contract, any quantity, freight allowed, lb. 7.25c
Do, spot carlots, bulk 7.50c
Do, ton lots 8.00c
Do., less-ton lots 8.25c

Tungsten Metal Powder, according to grade, spot shipment, 200-lb. drum lots, lb. $2.05
Do, smaller lots 2.15

Vanadium Pentoxide, contract, lb. contained $1.10
Do, spot 1.15

Chromium Metal, 98% cr., 0.50 carbon max., contract, lb. con. chrome 80.00c
Do, spot 85.00c
88% chrome, contract 79.00c
Do, spot 84.00c

Silicon Metal, 1% iron, contract, carlots, 2 x ⅛-in., lb. 14.00c
Do, 2% 12.50c
Spot ¼c higher

Silicon Briquetes, contract, carloads freight allowed, ton $69.50
Carload, spot 74.50
Less-ton lots, lb. 3.75c

Manganese Briquets, contract carloads, bulk freight allowed, lb. 4.50c
Ton lots 5.00c
Less-ton lots 5.25c
Spot ¼c higher

Zirconium Alloy, 12-15%, contract, carloads, gross ton $97.50
Do, spot 102.50

34-40%, contract, carloads, lb., alloy 14.00c
Do, ton lots 15.00c
Do, less-ton lots 16.00c
Spot ¼c higher

Molybdenum Powder, 99%, f.o.b. York, Pa. 200-lb. kegs, lb. $2.60
Do, 100-200 lb. lots 2.75
Do, under 100-lb. lots 3.00

WAREHOUSE STEEL PRICES

Base Prices in Cents Per Pound, Delivered Locally, Subject to Prevailing Differentials

	Soft Bars	Bands	Hoops	Plates ¼-in. & Over	Structural Shapes	Floor Plates	Sheets: Hot Rolled	Sheets: Cold Rolled	Sheets: Galv. No. 24
Boston	3.98	4.21	5.21	3.85	3.85	5.66	3.86	4.93	4.61
New York (Metropolitan)	3.94	4.11	4.11	3.76	3.75	5.56	3.73	4.90	4.50
Philadelphia	3.60	3.60	4.10	3.40	3.40	5.00	3.40	....	4.33
Baltimore	3.80	3.95	4.35	3.65	3.65	5.00	3.70	5.05	4.30
Norfolk, Va.	4.00	4.15	4.55	3.85	3.85	5.20	3.90	4.80	5.40
Buffalo	3.60	3.97	3.97	3.77	3.55	5.40	3.50	4.55	4.40
Pittsburgh	3.60	3.75	3.75	3.55	3.55	5.15	3.50	4.60	4.50
Cleveland	3.50	3.65	3.65	3.55	3.73	5.33	3.50	4.70	4.62
Detroit	3.43	3.58	3.83	3.75	3.80	5.42	3.58	4.65	4.74
Cincinnati	3.85	3.82	3.82	3.80	3.83	5.43	3.57	....	4.57
Chicago	3.60	3.75	3.75	3.55	3.55	5.15	3.50	4.45	4.50
Minneapolis	3.85	4.00	4.00	3.80	3.80	5.40	3.75	5.10	4.75
Milwaukee	3.73	3.88	3.88	3.68	3.68	5.28	3.63	4.58	4.63
St. Louis	3.87	4.02	4.02	3.82	3.82	5.42	3.77	4.72	4.77
Kansas City	4.15	4.30	4.30	4.10	4.10	5.70	4.10	....	4.75
Memphis	4.00	4.15	4.15	3.95	3.95	5.71	3.90	....	5.25
Chattanooga	3.90	4.05	4.05	3.85	3.85	5.80	3.80	....	4.40
Tulsa, Okla.	4.64	4.79	4.79	4.59	4.59	6.19	4.54	....	5.54
Birmingham, Ala.	3.50	3.65	3.65	3.45	3.45	5.83	3.40	....	4.75
New Orleans	3.85	4.65	4.65	3.80	3.80	5.75	4.10	....	4.60
Houston, Tex.	3.50	5.85	6.25	4.05	4.05	5.65	3.95	....	5.25
Seattle	4.30	4.50	5.85	4.05	4.15	5.90	3.95	....	5.25
Portland, Oreg.	4.00	4.40	6.10	4.00	4.00	5.50	3.95	6.50	4.75
Los Angeles	4.00	4.50	6.35	4.00	4.00	6.20	4.20	6.30	5.05
San Francisco	4.05	4.45	6.00	4.00	4.00	5.60	4.00	6.40	5.15

	Cold Rolled Strip	Cold Finished Bars	SAE Hot-rolled Bars (Unannealed): 1035-1050	2300 Series	3100 Series	4100 Series	6100 Series	SAE Cold Drawn Bars: 2300	3100
Boston	3.61	4.43	4.28	7.65	6.25	6.00	8.05	8.73	7.33
New York	3.66	4.39	4.14	7.50	6.10	5.85	....	8.69	7.29
Philadelphia	3.66	4.36	3.85	7.46	6.06	5.81	8.71	....	....
Baltimore	....	4.35	3.95	....	....	....	....	....	....
Norfolk, Va.	....	4.60	....	....	....	....	....	....	....
Buffalo	3.57	4.05	3.80	7.25	5.85	5.60	7.65	8.25	6.85
Pittsburgh	3.35	3.95	3.80	7.35	5.95	5.70	7.75	8.35	6.95
Cleveland	3.35	4.05	3.70	7.45	6.05	6.05	7.85	8.25	6.85
Detroit	3.55	3.60	3.58	7.57	6.17	5.92	7.39	8.55	7.15
Cincinnati	3.60	4.30	3.90	7.59	6.19	5.94	8.99	8.60	7.20
Chicago	3.65	4.05	3.80	7.25	5.85	5.60	7.65	8.25	6.85
Minneapolis	....	4.64	4.00	7.60	6.20	8.79	9.34	8.94	7.54
Milwaukee	....	4.18	3.93	7.48	6.08	5.85	7.88	8.48	7.08
St. Louis	3.76	4.32	4.07	7.62	6.22	5.97	8.02	8.62	7.22
Kansas City	4.46	4.60	....	....	....	....	....	....	....
Memphis	....	4.61	....	....	....	....	....	....	....
Chattanooga	....	4.90	....	....	....	....	....	....	....
Tulsa, Okla.	....	5.09	....	....	....	....	....	....	....
Birmingham, Ala.	....	4.73	....	....	....	....	....	....	....
New Orleans	5.00	5.10	....	....	....	....	....	....	....
Seattle	....	5.60	5.65	....	7.80	7.65	8.45	....	....
Portland, Oreg.	....	5.60	6.10	9.00	8.00	7.85	8.70	....	....
Los Angeles	4.45	6.50	4.65	9.40	8.55	8.40	9.05	10.40	9.55
San Francisco	*9.30	6.55	5.20	9.65	8.80	8.65	9.30	10.65	9.80

* Based on minimum quantity.

CURRENT IRON AND STEEL PRICES OF EUROPE

Dollars at Rates of Exchange, March 9

Export Prices f. o. b. Port of Dispatch—

By Cable or Radio

	British gross tons U. K. ports £ s d	Quoted in dollars at current value	Continental Channe or North Sea ports, gross tons **Quoted in gold pounds sterling £ s d
Foundry, 2.50-3.00 Si.	$23.45 5 0 0	$17.25	2 0 6
Basic bessemer	....	16.40	1 18 6
Hematite, Phos. .03-.05	26.97 5 15 0*	.....	.....
Billets	$34.59 7 7 6	$38.34	4 10 0
Wire rods, No. 5 gage	53.35 11 7 6	42.60	5 0 0
Standard rails	$44.56 9 10 0	$48.99	5 15 0
Merchant bars	2.30c 11 0 0	1.90c to 2.05c	4 17 6 to 5 5 0
Structural shapes	2.09c 10 0 0	1.85c to 1.90c	4 15 0 to 4 17 6
Plates, †¼ in. or 5 mm.	2.29c 10 18 9	2.19c to 2.39c	5 12 6 to 6 2 6
Sheets, black, 24 gage or 0.5 mm.	2.72c 13 0 0	2.93c	7 10 0*
Sheets, gal., 24 ga., corr.	3.29c 15 15 0	3.61c	9 5 0
Bands and strips	2.77c 13 5 0	1.95c	5 0 0
Plain wire, base	4.08c 19 10 0	2.39c to 2.83c	6 2 6 to 7 5 0
Galvanized wire, base	4.86c 23 5 0	3.07c to 3.17c	7 17 6 to 8 2 6
Wire nails, base	.....	2.73c to 2.93c	7 0 0 to 7 10 0
Tin plate, box 108 lbs.	$ 4.73 1 0 3	.....	.....

British ferromanganese $80.00 delivered Atlantic seaboard duty-paid.

Domestic Prices at Works or Furnace—

Last Reported

	£ s d		French Francs		Belgian Francs		Reich Mark
Fdy. pig iron, Si. 2.5	$23.22	4 19 0(a)	$17.44	620.50	$16.18	480	$25.29	63
Basic bess. pig iron	21.69	4 12 6(a)	.....	...	.....	...	27.90(b)	69.50
Furnace coke	5.39	1 4 2	5.96	225	7.25	215	7.63	19
Billets	34.59	7 7 6	25.04	945	28.98	860	38.74	96.50
Standard rails	1.99c	9 10 0	1.56c	1,300	2.06c	1,375	2.38c	132
Merchant bars	2.42c	11 12 0††	1.44c	1,202	1.65c	1,100	1.98c	110
Structural shapes	2.17c	10 8 0††	1.41c	1,173	1.65c	1,100	1.93c	107
Plates, †¼-in. or 5 mm.	2.29c	10 19 3††	1.82c	1,515	2.06c	1,375	2.29c	127
Sheets, black	3.08c	14 15 0§	2.17c	1,805‡	2.36c	1,575‡	2.59c	144‡
Sheets, galv., corr., 24 ga. or 0.5 mm.	3.61c	17 5 0	3.12c	2,600	4.13c	2,750	6.66c	370
Plain wire	4.08c	19 10 0	1.92c	1,600	2.48c	1,650	3.11c	173
Bands and strips	2.58c	12 7 0††	1.71c	1,340	1.95c	1,300	2.29c	127

*Basic. †British ship-plates. Continental, bridge plates. §24 ga. ‡1 to 3 mm. basic price. British quotations are for basic open-hearth steel. Continent usually for basic-bessemer steel. (a) del. Middlesbrough. 5s rebate to approved customers. (b) hematite. °Close annealed. ††Rebate of 15s on certain conditions.

**Gold pound sterling carries a premium of 75 per cent over paper sterling.

IRON AND STEEL SCRAP PRICES

Corrected to Friday night. Gross tons delivered to consumers, except where otherwise stated; † indicates brokers prices

HEAVY MELTING STEEL

Birmingham, No. 1	†12.00
Bos. dock No. 1 exp.	13.00-13.50
New Eng. del. No. 1	14.00
Buffalo, No. 1	13.75-14.25
Buffalo, No. 2	12.00-12.50
Chicago, No. 1	14.00-14.50
Chicago, auto, no alloy	12.50-13.00
Chicago, No. 2 auto	11.50-12.00
Cincinnati, dealers	12.00-12.50
Cleveland, No. 1	14.00-14.50
Cleveland, No. 2	13.00-13.50
Detroit, No. 1	10.00-10.50
Detroit, No. 2	9.00- 9.50
Detroit (industrial)	10.50-11.00
Eastern Pa., No. 1	15.00-15.50
Eastern Pa., No. 2	13.00-13.50
Federal, Ill.	11.75-12.25
Granite City, R. R.	12.25-12.75
Granite City, No. 2	11.00-11.50
Los Angeles, No. 1	12.50-13.50
Los Angeles, No. 2	11.00-11.50
N. Y. dock No. 1 exp.	12.00-12.50
Pitts., No. 1 (R. R.)	16.50-17.00
Pittsburgh, No. 1	15.50-16.00
Pittsburgh, No. 2	14.75-15.25
St. Louis, R. R.	12.25-12.75
St. Louis, No. 2	11.00-11.50
San Francisco, No. 1	12.00
Seattle, No. 1	12.00
Toronto, dirs. No. 1	9.75-10.25
Valleys, No. 1	15.00-15.50

COMPRESSED SHEETS

Buffalo	12.00-12.50
Chicago, factory	13.00-13.50
Chicago, dealer	12.00-12.50
Cincinnati, del.	11.25-11.75
Cleveland	14.00-14.50
Detroit	11.75-12.25
E. Pa., new mat.	15.50
E. Pa., old mat.	11.00-11.50
Los Angeles	12.50-13.00
Pittsburgh	15.50-16.00
St. Louis	10.00-10.50
Valleys	14.50-15.00

BUNDLED SHEETS

Buffalo, No. 1	12.00-12.50
Buffalo, No. 2	11.00-11.50
Cleveland	10.00-10.50
Los Angeles	14.00
Pittsburgh	14.75-15.25
St. Louis	7.50- 8.00
Toronto, dealers	4.00

SHEET CLIPPINGS, LOOSE

Chicago	9.25- 9.75
Cincinnati, dealers	7.25- 7.75
Detroit	8.50- 9.00
†Los Angeles	3.75- 4.00
St. Louis	7.00- 7.50

BUSHELING

Buffalo, No. 1	12.00-12.50
Chicago, No. 1	12.50-13.00
Cincin., No. 1, deal.	8.25- 8.75
Cincinnati, No. 2	3.75- 4.25
Cleveland, No. 2	8.00- 8.50
Detroit, No. 1, new	10.00-10.50
Valleys, new, No. 1	14.25-14.75
Toronto, dealers	4.00

MACHINE TURNINGS (Long)

Birmingham	†4.50- 5.00
Buffalo	7.00- 7.50
Chicago	6.75- 7.25
Cincinnati, dealers	5.00- 5.50
Cleveland	7.50- 8.00
Detroit	6.00- 6.50
Eastern Pa.	9.00- 9.50
Los Angeles	4.50- 5.00
New York	†3.50- 4.00
Pittsburgh	9.50-10.00
St. Louis	3.00- 4.00
Toronto, dealers	4.00- 4.50
Valleys	9.50-10.00

SHOVELING TURNINGS

Buffalo	7.25- 8.00
Cleveland	7.50- 8.00
Chicago	8.50- 9.00
Detroit	6.75- 7.25
Pitts., alloy-free	11.25-11.75

BORINGS AND TURNINGS

For Blast Furnace Use

Boston district	2.00
Buffalo	7.00- 7.25
Cincinnati, dealers	3.50- 4.00
Cleveland	8.00- 8.50
Eastern Pa.	6.50- 7.00
Detroit	6.25- 6.75
New York	†2.50- 3.00
Pittsburgh	8.50- 9.00
Toronto, dealers	5.00- 5.50

AXLE TURNINGS

Boston district	†7.50
Buffalo	9.50-10.00
Chicago, elec. fur.	14.00-14.50
East. Pa., elec. fur.	13.00-13.50
St. Louis	9.50-10.00
Toronto	4.00- 4.50

CAST IRON BORINGS

Birmingham	†6.00- 6.50
Boston dist. chem.	†6.00- 6.25
Buffalo	7.50- 8.00
Chicago	6.00- 6.50
Cincinnati, dealers	3.50- 4.00
Cleveland	8.00- 8.50
Detroit	6.25- 6.75
E. Pa., chemical	10.00-11.00
New York	†3.50- 4.00
St. Louis	2.50- 3.00
Toronto, dealers	3.50

RAILROAD SPECIALTIES

Chicago	16.00-16.50

ANGLE BARS—STEEL

Chicago	15.50-16.00
St. Louis	13.75-14.25

SPRINGS

Buffalo	16.00-16.50
Chicago, coil	16.50-17.00
Chicago, leaf	15.75-16.25
Eastern Pa.	17.00-17.50
Pittsburgh	18.00-18.50
St. Louis	15.00-15.50

STEEL RAILS, SHORT

Birmingham	†12.00-12.50
Buffalo	17.00-17.50
Chicago (3 ft.)	16.00-16.50
Chicago (2 ft.)	16.50-17.00
Cincinnati, dealers	17.00-17.50
Detroit	17.00-17.50
Los Angeles	15.00-15.50
Pitts., 3 ft. and less	18.25-18.75
St. Louis, 2 ft. & less	16.25-16.75

STEEL RAILS, SCRAP

Boston district	†13.50-14.00
Buffalo	16.00-16.50
Chicago	14.00-14.50
Cleveland	17.00-17.50
Pittsburgh	17.00-17.50
St. Louis	13.75-14.25
Seattle	16.00

FROGS, SWITCHES

Chicago	14.00-14.50
St. Louis, cut	13.75-14.00

ARCH BARS, TRANSOMS

St. Louis	14.00-14.50

PIPE AND FLUES

Chicago, net	9.00- 9.50
Cincinnati, dealers	7.25-7.75

RAILROAD GRATE BARS

Buffalo	10.00-10.50
Chicago, net	8.50- 9.00
Cincinnati, dealers	7.25- 7.75
Eastern Pa.	13.00-13.50
New York	†8.50- 9.00
St. Louis	9.00- 9.50

RAILROAD WROUGHT

Birmingham	†11.00-11.50
Boston district	†9.50-10.00
Eastern Pa., No. 1	15.50-16.00
St. Louis, No. 1	10.75-11.25
St. Louis, No. 2	10.00-10.25
Toronto, No. 1 dlr.	8.00

FORGE FLASHINGS

Boston district	†8.50
Buffalo	12.00-12.50
Cleveland	12.00-12.50
Detroit	10.50-11.00
Los Angeles	9.00
Pittsburgh	14.50-15.00

FORGE SCRAP

Boston district	†6.50
Chicago, heavy	16.50-17.00

LOW PHOSPHORUS

Buffalo, crops	16.50-17.00
Cleveland, crops	18.00-18.50
Eastern Pa., crops	17.00-17.50
Pitts., billet, bloom, slab crops	19.00-19.50

LOW PHOS. PUNCHINGS

Buffalo	15.50-16.00
Chicago	16.00-16.50
Eastern Pa.	17.50-18.00
Pittsburgh	17.50-18.00
Seattle	15.00

RAILS FOR ROLLING

5 feet and over

Birmingham	†14.00-15.00
Boston	15.00-15.50
Chicago	17.00-17.50
New York	†14.50-15.00
Eastern Pa.	17.00-17.50
St. Louis	16.50-17.00

STEEL CAR AXLES

Birmingham	†15.00-16.00
Buffalo	16.50-17.00
Boston district	†16.00-16.50
Chicago, net	18.00-18.50
Eastern Pa.	21.00-21.50
St. Louis	18.00-18.50

LOCOMOTIVE TIRES

Chicago (cut)	16.00-16.50
St. Louis, No. 1	13.50-14.00

SHAFTING

Boston district	†15.25-15.50
New York	†15.50-16.00
Eastern Pa.	20.50-21.00
St. Louis, 1¼-3¾"	17.50-18.00

CAR WHEELS

Birmingham	†13.50-14.00
Boston dist., iron	†11.00
Buffalo, steel	16.50-17.00
Chicago, iron	13.50-14.00
Chicago, rolled steel	15.50-16.00
Cincin., iron, deal.	13.50-14.00
Eastern Pa., iron	16.50-17.00
Eastern Pa., steel	17.00-17.50
Pittsburgh, iron	15.00-15.50
Pittsburgh, steel	18.00-18.50
St. Louis, iron	14.50-15.00
St. Louis, steel	14.50-15.00

NO. 1 CAST SCRAP

Birmingham	†13.00-13.50
Boston, No. 1 mach.	†10.50-10.75
N. Eng. del. No. 2	12.00-12.50
N. Eng. del. textile	12.50-13.00
Buffalo, cupola	14.50-15.00
Buffalo, mach.	15.50-16.00
Chicago, agri. net	10.50-11.00
Chicago, auto net	13.00-13.50
Chicago, railr'd net	11.00-11.50
Chicago, mach. net	12.00-12.50
Cincin., mach. deal.	14.00-14.50
Cleveland, mach.	17.00-17.50
Eastern Pa., cupola	16.50-17.00
E. Pa., mixed yard	14.50
Los Angeles, net	13.50-14.00
Pittsburgh, cupola	15.25-15.75
San Francisco, del.	13.50-14.00
Seattle	12.00-14.50
St. Louis, cupola	12.00-12.50
St. Louis, agri. mach.	14.00-14.50
St. L., No. 1 mach.	14.50-15.00
Toronto, No. 1, mach., net	12.00-13.00

HEAVY CAST

Boston dist. break.	†9.75
New England, del.	12.50-13.00
Buffalo, break.	11.00-11.50
Cleveland, break, net	13.00-13.50
Detroit, auto net	13.00-13.50
Detroit, break.	10.00-10.50
Eastern Pa.	15.00-15.50
Los Ang., auto, net	13.00-13.50
New York, break.	†11.00-11.50
Pittsburgh, break	13.25-13.75

STOVE PLATE

Birmingham	†7.50- 8.00
Boston district	†8.00- 8.25
Buffalo	13.00-13.50
Chicago, net	8.50- 9.00
Cincinnati, dealers	7.25- 7.75
Detroit, net	8.00- 8.50
Eastern Pa.	13.00-13.50
New York, fdy.	†10.00-10.50
St. Louis	7.50- 8.00
Toronto dealers, net	7.50- 8.00

MALLEABLE

Birmingham, R. R.	†10.50-11.00
New England, del.	14.50-15.00
Buffalo	13.50-14.00
Chicago, R. R.	15.00-15.50
Cincin., agri. deal.	12.50-13.00
Cleveland, rail	15.00-15.50
Eastern Pa., R. R.	15.00-16.50
Los Angeles	17.50-18.00
Pittsburgh, rail	14.25-14.75
St. Louis, R. R.	12.25-12.75

Iron Ore

Lake Superior Ore

Gross ton, 51½%

Lower Lake Ports

Old range bessemer	$5.25
Mesabi nonbes.	4.95
High phosphorus	4.85
Mesabi bessemer	5.10
Old range nonbes.	5.10

Eastern Local Ore

Cents, unit, del. E. Pa.

Foundry and basic 56.63% con.	9.00-9.25
Cop.-free low phos. 58-60%	nominal

Foreign Ore

Cents per unit, c.i.f. Atlantic

Foreign manganiferous ore, 45.55% iron, 6-10% man. nom.	12.00
No. Afr. low phos.	12.50-13.00
Swedish low phos.	12.50-13.00
Spanish No. Africa basic, 50 to 60% nom.	11.00
Tungsten. sh. ton. unit, duty pd. nom.	19.00
N. F., fdy., 55%	7.00
Chrome ore, 48% gross ton, c.i.f.	$23.00-24.00
Molybdenum ores sulphide, per lb. molybdenum contained, f.o.b. mill	0.75

Manganese Ore

Prices not including duty, cents per unit cargo lots.

Caucasian, 50-52% nom.	30.00-31.00
So. African, 50-52% nom.	30.00-31.00
Indian, 49-50%	29.00-30.00

—The Market Week—

Sheets, Strip

Sheet and Strip Prices, Pages 80, 81

Pittsburgh — Some relief from recent dullness in hot and cold-rolled sheet business is looked for shortly. Mills expect last week's announcement of price reaffirmation for second quarter to have a beneficial effect, while automotive purchases for April manufacturing are counted on to increase soon. Operations of common and full finished sheet mills average about 45 per cent, with galvanized output at 60. A better outlook also prevails for strip demand. Hot strip production is near 35 per cent, with cold strip around 40.

Cleveland — Sheet and strip demand has shared little in the recent gain in total steel bookings here. Orders from automotive interests, while still lagging, are due to expand and shortly will be aided by absorption of tonnage placed several months ago as well as by increased asemblies of motor cars. Reaffirmation of prices and revised quantity differentials on hot-rolled sheets and strip and cold-rolled sheets is expected to have little effect on business.

Chicago — Automotive needs are looked to as the principal source of improved business in sheets and strip in the near future. Demand from farm equipment interests is sustained, while the call from miscellaneous consumers is improved slightly.

Boston — Despite scattered attractive specifications, cold strip volume is down, contrary to the usual and expected upturn this month. This reflects lower consumption by some industries and a general lack of confidence in others, resulting in hand-to-mouth buying for current needs only. Buying by the automotive trade is less than expected, although some fair business is being placed by agriculture implement builders. Operations are off slightly and finishing schedules are irregular, depending on day-to-day developments.

New York — Clarification of second quarter sheet and strip prices is expected to release some business recently held up and to stimulate some protective covering. Demand has varied little so far this month, although diversification of orders is encouraging to sellers.

Philadelphia—Several district job stamping plants are operating 70 per cent and over on miscellaneous work, including stove, refrigerator, radio, gasoline pump, aircraft and ship work. Automotive specifications are fairly steady. Eastern

Strangle fire IN A BLIZZARD OF HARMLESS SNOW

DIP TANK and drainboard fires can be smothered in a few seconds with a built-in LUX extinguishing system. Automatic or manual control releases a fire-killing cloud of carbon dioxide snow - and - gas, fastest known extinguishing agent. *Lux gas harms nothing but fire* . . . has no effect on paint, varnish or lacquer.

Lux portable extinguishers, Lux systems protect drying and baking ovens, spray booths, storage spaces and have a splendid performance record on electrical equipment fires.

Get the facts on Lux protection. Send the coupon today.

Walter Kidde & Company
332 West Street, Bloomfield, N. J.

Please send me a free copy of "Lux Makes the Difference", which describes Lux built-in systems and portable extinguishers.

Name.....
Company.....
Address.....

sheet makers have reaffirmed prices for second quarter, also adopting revised quantity differentials. Large jobbers of galvanized sheets are stocking heavily prior to April 1, effective date of elimination of functional allowances.

Buffalo — Heavier demand from general manufacturing consumers has improved the tone of the sheet and strip market. Inquiries are slow to improve, but the outlook is seen as more favorable. One of the leading mills resumed production after a complete shutdown week before last.

St. Louis — The market is quiet, and February business was disappointing to both producers and distributors. Galvanized sheets are moving in fair volume, but prices are more uncertain than on other grades. Jobbers are buying little. Cold strip demand is lighter. Missouri state purchasing agent, Jefferson City, Mo., closes bids March 17 on 700,000 pounds of sheets for license plates.

Birmingham, Ala. — Mills are producing sheets at capacity. Although some pressure has been exerted for deliveries, not much backlog has accumulated. Strip, consisting mainly of cotton ties, is being turned out in small volume.

Plates

Plate Prices, Page 80

Chicago — Plate demand is holding recent gains, with tank requirements prominent in current business. Miscellaneous needs also remain fairly heavy, while consumption in various types of construction work are improved. Railroad carbuilding is lending moderate support. Plate prices have been reaffirmed for second quarter.

New York—More than 1000 tons of plates is pending for 15 locomotives booked by American Locomotive Co., this city, for Union Pacific railroad. General contract on two sections of Boston sewer work has been placed with Silas Mason, New York, involving a relatively small plate tonnage. About 3500 tons is involved in a siphon for the same project, with new bids opening March 16.

Philadelphia — Business pending from district shipbuilders in plates, shapes and bars for vessels now under contract aggregates no less than 50,000 tons. This does not include steel already purchased and as yet not specified. Railroads slowly are increasing purchases for repair programs, thereby stimulating fire box plates and material for car side panels and truck frames. Miscellaneous and tank work is quiet but more small orders are reported.

Birmingham, Ala. — Output of plates continues at approximately 75 per cent with considerable volume originating from shipbuilding, specifications on which have recently been let.

San Francisco—Awards of plates were third largest for any week this year and aggregated 1113 tons. This brought the total to date to 12,561 tons, compared with 11,289 tons for the corresponding period in 1938. Little new business of importance is pending.

Seattle—Shops have some seasonal jobs in hand and ship repair work is about average. Demand for plates is confined to lots of less than 100 tons. Two shipbuilding contracts involving about 400 tons are pending.

Plate Contracts Placed

450 tons, 30-inch welded steel pipe, Riverside, Calif., to Consolidated Steel Corp., Los Angeles.

400 tons, 1,000,000-gallon elevated tanks, Tucson, Ariz., to Chicago Bridge & Iron Co., Chicago.

241 tons, three 4-foot discharge pipes, Flathead irrigation district, Polson, Mont., to Western Pipe & Steel Co., San Francisco.

175 tons, Big Creek intercepting sewer project, Cleveland, to Bethlehem Steel Co., Bethlehem, Pa.; through Lombardo Bros. Co., Cleveland.

140 tons, reservoir and filter, Shillington, Pa., to Chicago Bridge & Iron Co., Chicago.

100 tons, five tanks, North Beach airport, Queens, N. Y., to Hammond Iron Works, Warren, Pa., through procurement division, treasury department, New York.

Plate Contracts Pending

3500 tons, siphon, Chelsea Creek, Boston, north metropolitan sewer project; bids March 16, metropolitan district commission, Boston.

1000 tons, mostly plates, filtration plant, New Britain, Conn., DiLiso Construction Co., New York, low.

Unstated tonnage, 6,000,000-gallon steel water storage tank, city of Milwaukee; Koppers Co., Baltimore, low at $79,800.

Finished Steel Prices Extended

■ Reaffirmation of finished steel prices for second quarter delivery was made March 7 by Carnegie-Illinois Steel Corp. and has been followed by other producers. American Steel & Wire Co. made a similar announcement on rod and wire March 8.

At the same time changes were made in quantity deductions on carbon steel bars, hot-rolled strip and hot and cold-rolled sheets. Under the new schedule of deductions base is lowered from one to 25 tons to one to 20 tons and the maximum deduction of $3 per ton applies to 75 tons instead of 150 tons, as formerly.

Old and new schedules are as follows:

	Former Deductions
150 tons and over	$3.00
100 to 150 tons	2.00
50 to 100 tons	1.50
25 to 50 tons	1.00
1 to 25 tons	* base

	New Deductions
75 tons and over	$3.00
50 to 75 tons	2.00
20 to 50 tons	1.00
1 to 20 tons	* base

* Minimum base quantity on bars 3 tons in both cases.

Prices have been extended unchanged on tin plate, for second quarter only, and on cold-finished carbon steel bars, a new card of extras and deductions applying.

Bars

Bar Prices, Page 80

Pittsburgh—Currently slow carbon steel bar trade is expected to receive added impetus from reaffirmation of prices with modified quantity differentials for second quarter. The latter reduce the maximum tonnage receiving an allowance of $3 a ton from 150 tons to 75 tons. Base prices prevail on lots of 3 to 20 tons. Extras on orders of less than 3 tons are unchanged.

Cleveland — Only moderate effect on demand for hot-rolled carbon bars is looked for as a result of revisions in quantity deductions. Business lately has lacked a definite trend, although most recent changes have been upward. Requirements of auto partsmakers have yet to recover all of the letdown experienced last month but are expanding. Needs of bolt and nut makers have receded slightly.

Chicago—Bars continue one of the most active products here. Automotive and farm equipment are the chief support, although lately a broad miscellaneous demand has become strong. Further expansion is seen for the latter as well as heavier buying by automotive interests this spring. Building of trucks and industrial tractors is occupying a large share of activity of farm equipment companies.

Boston—Bar orders placed with mills are closely paced by jobber operations with secondary distributors confining specifications most-

ly to fill-in buying. Business going direct to mills is light with alloys and specialties making relatively the best showing in small, but fairly numerous orders.

New York — Some increase in commercial bar orders is expected as a result of the adjustment in quantity deductions. Business in cold-finished bars, also affected by revisions in quantity allowances, continues fairly active, with prospects encouraging. Machine tool builders are increasing their specifications, while government shops and airplane manufacturers are ordering freely, along with makers of marine hardware.

Philadelphia—Cold drawn and hot alloy bars continue to move fairly well and some replacement business is noted on the part of district warehouses. Forging shops and farm machinery production are more active. Some producers of common iron bars continue to quote 2.15c, Pittsburgh, or 2.47, delivered Philadelphia, but a Berwick, Pa., interest is reported offering 1000 pound lots at 2.10c, Philadelphia, and carlots at around 2.00c. However, it is pointed out this maker normally is not a market factor.

Buffalo — Bar demand is steady near the level of recent weeks. A falling off in automotive specifications is offset by a pickup in structural orders and in needs of machinery and tool manufacturers.

Birmingham, Ala.—Movement of bars, reinforcing and merchant, is in good volume. Output currently is approximately 80 per cent.

Pipe

Pipe Prices, Page 81

Pittsburgh—Production and mill shipments of merchant wrought pipe, much of it going into building construction, are maintained at fair levels. New business continues to develop slowly, but spring building prospects encourage mills to expect early acceleration in sales and shipments. Present dullness in oil and natural gas line demand is reflected in slackness in operations and shipments of both seamless and welded tubing.

Boston—Cast pipe buying is slightly heavier. Inquiries are mostly small. Small-lot buying and releases against contracts are well maintained. Merchant steel pipe buying is steady at the recent slightly improved rate, but demand for wrought pipe is slow.

New York—Steel pipe inquiries include several hundred tons of large diameter material for Hartford, Conn., to be placed by the Bronx Water Works, Inc., New York, while 600 tons of cast pipe for the same city went to a New Jersey foundry. Small-lot cast pipe inquiry is up slightly with indications of a seasonal improvement within the next few weeks.

Birmingham, Ala.—Pipe plants are maintaining schedules of a few weeks ago, although there have been no individually large lettings. American Cast Iron Pipe Co., low bidder on 15,000 tons for a Greenville, S. C., WPA project, expects award within the next few days.

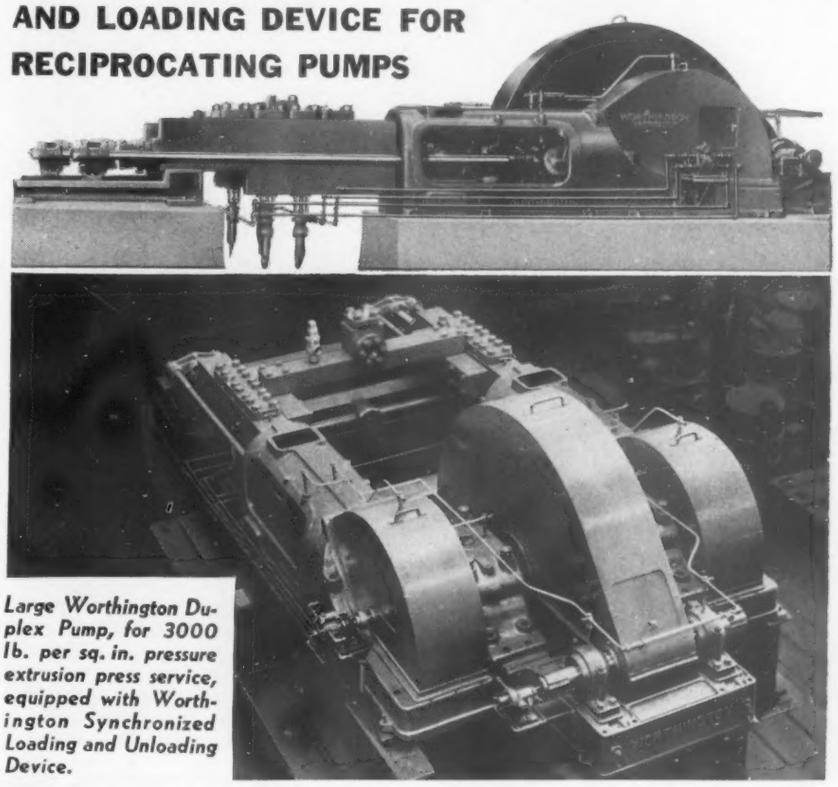
Seattle—No important tonnages are up for figures and municipalities generally find it difficult to finance improvements. Seattle opened bids March 9 for the Canada drive extension involving 155 tons of 16-inch pipe.

Cast Pipe Placed

1425 tons, 6 to 16-inch, city of Milwaukee, to United States Pipe & Foundry Co., Burlington, N. J.

600 tons, small sizes, Hartford, Conn.,

WORTHINGTON SYNCHRONIZED UNLOADING AND LOADING DEVICE FOR RECIPROCATING PUMPS



Large Worthington Duplex Pump, for 3000 lb. per sq. in. pressure extrusion press service, equipped with Worthington Synchronized Loading and Unloading Device.

THIS device, as illustrated above on a horizontal duplex double-acting pump, establishes a new standard of design for the automatic control of high-pressure pumps. It involves a control for motor-driven power pumps which, when operating continuously and at constant speed, may be briefly defined as follows:

MEMBER HYDRAULIC INSTITUTE U.S.A.

SYNCHRONIZED UNLOADING . . . A quick but gradual decelerating fluid delivery, from full to zero flow, in not more than one-half revolution of the pump.

SYNCHRONIZED LOADING . . . A quick but gradual accelerating fluid delivery, from zero to full flow, in not more than one-half revolution of the pump.

• *Literature available*

PP9-2

WORTHINGTON PUMP AND MACHINERY CORPORATION

General Offices: HARRISON, NEW JERSEY

100 Years of Service

to R. D. Wood & Co., Florence, N. J.

560 tons, 24-inch, Wellesley, Mass., to Warren Foundry & Pipe Corp., Everett, Mass.

186 tons, 2 to 8-inch, Los Angeles, to United States Pipe & Foundry Co., Burlington, N. J.

143 tons, Portland, Oreg., to United States Pipe & Foundry Co., Burlington, N. J.

113 tons, 20-inch, east bay municipal utility district, Oakland, Calif., to United States Pipe & Foundry Co., Burlington, N. J.

100 tons, 6 and 8-inch, New London, Conn., to Warren Foundry & Pipe Corp., Phillipsburg, N. J.

Cast Pipe Pending

200 tons, 6-inch, Saratoga Springs, N. Y.; bids in.

175 tons, mostly 8-inch, purchasing office, navy department, New York, schedule 8537; bids March 13.

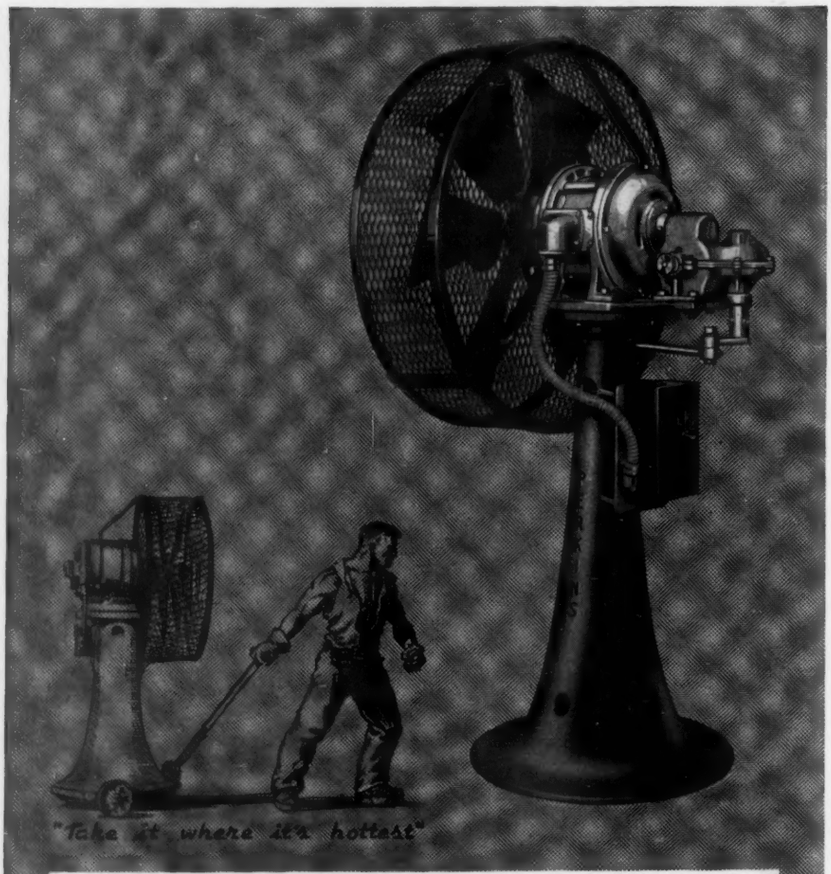
126 tons, 6 and 8-inch, Burbank, Calif.; bids opened.

110 tons, 6 to 24-inch with fittings, Northampton, Mass.; bids in.

Cold-Finished Steel

Cold Finished Prices, Page 81

Cold-finished carbon steel bar prices have been reaffirmed for second quarter at $2.70 per 100 pounds, Pittsburgh, Cleveland, Buffalo and Chicago, and $2.75, Detroit. A new card of quantity differentials will apply, this involving minor changes and reflecting revisions in hot-rolled bar quantity deductions.



Perkins Man Coolers create refreshing recirculation of air without chilling drafts.

Perkins Man Coolers help to maintain production schedules in the hottest places.

Perkins Man Coolers decrease labor turnover and help to make contented workers.

PERKINS MAN COOLERS ARE MADE IN OSCILLATING AND STATIONARY TYPES, BOTH PORTABLE.

B. F. PERKINS & SON, INC. HOLYOKE, MASS.

Engineers and Manufacturers

PERKINS MAN COOLERS

TRADE MARK REG. U. S. PAT. OFF.

Rails, Cars

Track Material Prices, Page 81

New York Central has awarded 56,200 tons of rails, plus a tonnage of accessories, costing about $4,000,000. The tonnage was divided between Bethlehem Steel Co., Carnegie-Illinois Steel Corp., Inland Steel Co. and Algoma Steel Corp. This is the largest rail tonnage placed in the East since the fall of 1936 when the New York Central placed about 82,000 tons. The present purchase is in addition to 26,000 tons placed last fall.

Missouri Pacific has asked bidders on its recent equipment inquiries to protect prices until April 15. This applies to two streamlined passenger trains, seven diesel locotives and 1150 freight cars. Under federal court authorization the road expects to place these orders by April 1.

Car Orders Placed

Canadian National 10 baggage cars and five mail and express cars, to American Car & Foundry Co. Ltd., Montreal, Que.

Locomotives Placed

Chicago, Rock Island & Pacific, 11 tenders, to American Locomotive Co., New York.

Union Pacific, 15 locomotives, to American Locomotive Co., New York.

Rail Orders Placed

New York Central, 56,200 tons, to Bethlehem Steel Co., Carnegie-Illinois Steel Corp., Inland Steel Co., Algoma Steel Corp.; tonnage of track fastenings also distributed.

Car Orders Pending

Delaware & Hudson, six passenger cars; bids opened.

Navy, two box and two flat cars; Greenville Steel Car Co., Greenville, Pa., low.

Wire

Wire Prices, Page 81

Pittsburgh — Uncertainty on wire prices now has cleared for expected spring buying by American Steel & Wire Co. reaffirming first-quarter prices for second-quarter delivery. Purchases up to this time have been

small individually but more active buying is expected to pick up shortly.

Cleveland — Current base prices on rods and wire have been reaffirmed for delivery during second quarter, it is announced by American Steel & Wire Co. Merchant wire products hold at recent levels but are not included in the regular quarterly announcements. Manufacturers' wire demand has recovered only slightly from the dip experienced in February, though improved consumption is in prospect in some directions. Business in merchant products holds recent gains.

Chicago — Business in wire and wire products is sustained near the level of a month ago. Automotive requirements are disappointing, but a marked pickup is expected later this month. Current demand is broad, with needs of bedspring manufacturers outstanding. Hardware makers are lending moderate support, with farm equipment firms taking larger tonnages than a year ago. Prices generally are steady, following extension of rod and wire quotations into second quarter.

Boston—Incoming wire orders are tapering, a few scattered specialties being exceptions. Manufacturers' wire is slightly less active and demand for rods is dull. This is reflected in finishing operations, which are off a few points in numerous departments. Orders are for immediate delivery.

Shapes

Structural Shape Prices, Page 80

New York—Structural contracts are few with outstanding tonnage projects lacking. Most heavy tonnage placed two months ago under the PWA program is now being rolled or fabricated, although considerable shop work remains to be done. Private construction lags, but close to 3600 tons for a Hartford, Conn., industrial plant has been tentatively placed. Bridge needs are light with indications the Raritan river bridge, Woodbridge-Sayreville, N. J., will be the next outstanding project, bids on which are expected in about six weeks.

Cleveland — Largest recent award went to R. C. Mahon Co., Detroit, 392 tons, for the Big creek intercepting sewer project here. The outlook offers considerable encouragement with prospects of a number of bridge projects, totaling about 15,000 tons, during the next 60 days.

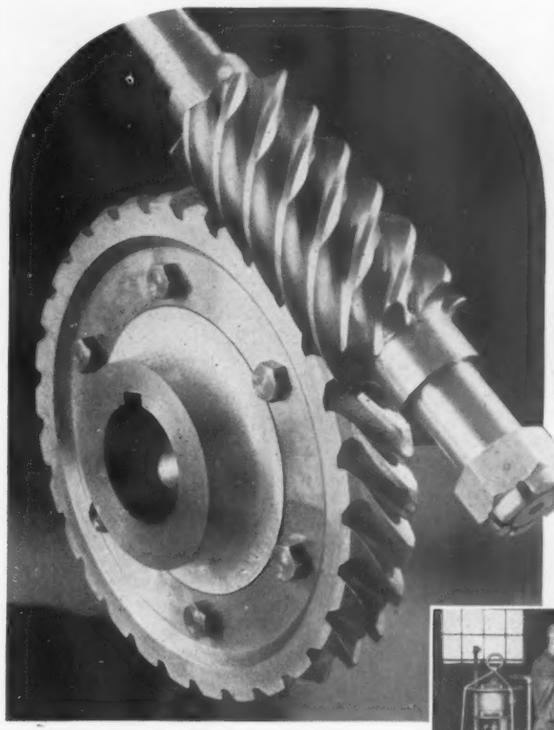
Pittsburgh — About one-fifth of the awards are for private construction, with most covering tonnages for state and county bridges, schools and college dormitories. The largest single award was 1600 tons to Bethlehem Steel Co. for a bridge over Green river, Kentucky. The bulk of tonnage now being rolled covers the lighter weight structurals.

Chicago — There is a fair amount of activity in the structural market, but it is too early to note tonnage increases expected to arise this month. Demand recently has been consistent, particularly sustained by

Shape Awards Compared

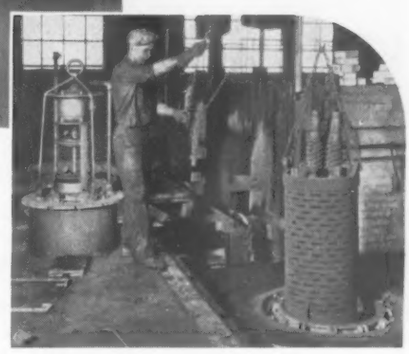
	Tons
Week ended March 11	16,042
Week ended March 4	19,602
Week ended Feb. 25	27,602
This week, 1938	20,949
Weekly average, year, 1938	21,566
Weekly average, 1939	26,079
Weekly average, February.	17,123
Total to date, 1938	142,926
Total to date, 1939.....	234,686

Includes awards of 100 tons or more.



CLEVELAND WORM & GEAR AND HEVI DUTY FURNACES

"The finest product that we know how to make" has been the standard of measurement of The Cleveland Worm & Gear Company since 1912. Each improvement in the Cleveland line has been incorporated only when its merit has been proved through painstaking research. The heat treatment for the entire output of worms is done in Hevi Duty Vertical Carburizing Furnaces.



An HD 1872 Vertical Retort Carburizing Furnace in the plant of The Cleveland Worm & Gear Co., Cleveland

Send for Bulletin HD 937

HEVI DUTY ELECTRIC COMPANY

HEAT TREATING FURNACES HEVI DUTY ELECTRIC EXCLUSIVELY

MILWAUKEE, WISCONSIN

Behind the Scenes with STEEL

Some Argument

■ It seems that these three old hermits had been living out in this God-forsaken stretch of land for years, silently growing their own vegetables, silently hunting their own game and silently whiling away day after day. And then one bright spring day as they are all hoeing in the vegetable garden, a very snappy looking lass comes walk-

ing out of the woods, passes them and disappears as the three old hermits lean silently on their hoes and watch. Nothing is said until late in the evening when the first hermit remarks: *She sure were a beautiful blonde,* but the other two don't say a word. . . . It is over a year later, and the hermits are back out in the garden hoeing again. The year-long silence is sharply broken when the second hermit yells over to the first hermit: *Say, she weren't no blonde; she were a brunette,* whereupon the third hermit, in a fit of rage, throws down his hoe and stalks off in disgust. *If you guys are going to argue all the time,* he says, *I'm leavin'!*

Very Flattering

■ Which is just about the silliest story we've heard in a long time and if it is too ridiculous we'll quickly jump to the sublime in the form of a compliment in last week's mail from a consulting engineer who has long been a reader of STEEL. He writes: *I very much appreciate* STEEL *and I venture the claim that* STEEL *sustained my morale during the depression from* 1930 *onwards.*

Normalcy

■ Something like that makes us feel pretty good but we really are worried about the way he lets the depression drag *onwards.* Unless our bi-focals are acting up again the handwriting on the wall says this year of our Lord, 1939, will be very respectable and normal—not too bullish, not too bearish. But then, we suppose, who wants to be just normal? That leaves nothing to brag or gripe about.

Hobby Lobby

■ Emil Kreutzberg, head man of our New York office, sends us this picture of Frederick H. Lovejoy, v. p. of Wheelock-Lovejoy Inc., mushing gayly along behind a string of real Alaskan sled dogs and suggests we start a hobby department entitled, *Them As Is Different* which isn't a bad idea. According to Emil, "this guy Lovejoy goes in for this stuff regularly, and enters these thirty or forty mile races. He was too modest to talk about it and wouldn't give

me any dope on what all he'd won, but anyhow they're nice dogs, aren't they?" They certainly are and for a sport like that Mr. Lovejoy has a perfect name.

Under Consideration

■ We were besieged last week with a letter from our most faithful admirer, Miss Adeline Simpson, of the Chicago Pure Oil Simpsons, demanding an appearance in these columns of Ann Shrdlu, teeth and all. When interviewed on the subject last evening, Miss Shrdlu grew pensive and said: *Goo,* which, of course as you know, means, *I'll think it over.*

—SHRDLU

small lot requirements of a miscellaneous nature. Producing interests are confident that with the coming of warmer weather, construction requirements will become more urgent and closings on numerous substantial tonnages are anticipated.

Boston — Bridge needs are up slightly. Coleman Bros., Boston, is low on the 1175-ton plate girder overpass, Cottage Farms overpass, Cambridge, Mass. Several hundred tons for small I-beam spans, Vermont, have been placed with new inquiries mounting. Building construction inquiry is also increasing mildly, largely for public work. For industrial expansion, close to 3600 tons, new buildings for Pratt & Whitney, Hartford, is outstanding.

Philadelphia—Celanese Corp., Narrows, Va., has postponed bids to March 17 on building program involving approximately 2000 tons and will revise plans. Turner Construction Co., Philadelphia, may obtain contract for apartment house, 2601 Pennsylvania avenue, Philadelphia. Substantial tonnage also will be required for laboratory building bureaus of standards, Washington; bids March 21. Several smaller jobs are also pending.

Buffalo—Activity is continuing to expand, with tonnage pending the best in months, due chiefly to government work, principally school projects.

San Francisco — Awards are slightly above the average weekly bookings for the year of 2764 tons, totaling 3022 tons. This brings the aggregate to date to 30,127 tons, compared with 17,688 tons last year.

Seattle — Largest project up for figures is the Seattle federal courthouse, bids at Washington, D. C., April 7, involving approximately 1000 tons.

Shape Contracts Placed

3600 tons, plant buildings, Pratt & Whitney division Niles Bement & Pond Co., Hartford, Conn., to Bethlehem Steel Co., Bethlehem, Pa.

2500 tons, federal building, New Orleans, to American Bridge Co., by S. N. Nielsen Co., general contractor, Chicago.

1600 tons, state bridge over Green river, Livermore, Ky., to Bethlehem Steel Corp., Bethlehem, Pa.

1200 tons, state bridge over Cedar river, Waterloo, Iowa, to Bethlehem Steel Co., Bethlehem, Pa.

600 tons, state crossing Albany, Oreg., to Poole & McGonigle, Portland; previously reported unstated; Mount States Construction Co., Eugene, Oreg., general contractor.

515 tons, switch structural, Hastings, Nebr., 130 tons, St. Joseph Structural Steel Co., St. Joseph, Mo.; 335 tons, Pittsburgh-Des Moines Steel Co., Pittsburgh, and 50 tons, Omaha Steel Co., Omaha.

500 tons, anchorage bars, Lake Washington bridge, Seattle, to Columbia Steel Co., San Francisco.

500 tons, 50-ton jib cranes, Mare Island, Calif., and Bremerton, Wash., navy yards, to Star Iron & Steel Co., Tacoma, Wash.

480 tons, Bonneville powerhouse superstructure to Bethlehem Steel Co., previously reported unstated; L. H. Hoffman, Portland, general contractor.

450 tons, high school addition, Colorado Springs, Colo., to Minneapolis-Moline Power Implement Co., Minneapolis.

392 tons, intercepting sewer, Cleveland, to R. C. Mahon Co., Detroit; through Lombardo Bros. Co., Cleveland, 268 tons piling remains to be placed.

300 tons, piling, Carter road bridge project, Cleveland, to Carnegie-Illinois Steel Corp., Pittsburgh; through Lombardo Bros. Co., Cleveland, 300 tons additional remains to be placed.

285 tons, Cross county parkway bridge, Yonkers, N. Y., for Westchester county, to American Bridge Co., Pittsburgh.

280 tons, power house addition, Public Utility, Engineering & Service Corp., San Diego, Calif., to National Iron Works, San Diego.

260 tons, state bridge, FAGM 19-A, Grand Junction, Colo., to Midwest Steel & Iron Co., Denver.

250 tons, Union Pacific train shed, Council Bluffs, Iowa, to Omaha Steel Works, Omaha, Nebr.

215 tons, dormitory, state college, Storrs, Conn., to Haarmann Steel Co., Holyoke, Mass.

210 tons, bridge sec. 46-1SF, Mundelein, Lake county, Illinois, to A. F. Anderson Iron Works, Chicago.

210 tons, power house, Stegmaier Brewing Co., Wilkes Barre, Pa., to Lehigh Structural Steel Co., Allentown, Pa.

195 tons, stop log guides, Odair, Wash., to Schmitt Steel Co., bureau of reclamation spec. 1173D.

165 tons, transfer bridge, Eastern District Terminal Co., Brooklyn, N. Y., to American Bridge Co., Pittsburgh.

165 tons, material for police and fire station, Providence, R. I., to American Bridge Co., Pittsburgh.

165 tons, 311-foot bridge, Douglas, Nebr., to Omaha Steel Works, Omaha.

160 tons, packing and shipping building, International Harvester Co., Rock Island, Ill., to Gage Structural Steel Co., Chicago.

160 tons, three I-beam bridges, Fayston, Vt., and Waitsfield, Vt., to American Bridge Co., Pittsburgh; Bristol Contracting Co., Bristol, N. H., general contractor, and I-beam bridge, Sherburne-Mendon, Vt., through Earle & Merry, Rutland, Vt.

160 tons, museum addition, Denver, to The E. Burkhardt & Sons Steel & Iron Works Co., Denver.

150 tons, school, East Bloomfield, N. Y., to American Bridge Co., Pittsburgh.

150 tons, junior high school, Rensselaer, N. Y., to Clausen Iron Works, Albany, N. Y.

145 tons, central school, Fillmore, N. Y., Rogers Structural Steel Co., Corry, Pa.

140 tons, jail and court house, Huntington, W. Va., to Keystone Engineering Co., Pittsburgh.

135 tons, sec. SY-SF1, Lake Zurich, Lake county, Illinois, to American Bridge Co., Pittsburgh.

130 tons, parish house, Bethlehem, Pa., to Bethlehem Contracting Co., Bethlehem, Pa.

125 tons, state bridge, contract 1759, Brownstown, Ind., to American Bridge Co., Pittsburgh.

125 tons, field office and warehouse, Cuyahoga county, Brecksville, O., to Fort Pitt Bridge Works, Pittsburgh.

105 tons, bridge 5201, Palm Beach county, Florida, to Aetna Iron & Steel Co., Jacksonville, Fla.

100 tons, 84-foot and 64-foot I-beam bridges, Arlington-Sandgate, Vt., to Bethlehem Steel Co., Bethlehem, Pa.; Dennie B. Riggs, Troy, N. Y., general contractor, $29,080.65, bids Feb. 24. Montpelier.

100 tons, plain material, two I-beam bridges, Plymouth, Vt., to Carnegie-Illinois Steel Corp., Pittsburgh; H. E. Hunt, Hudson Falls, N. Y., general contractor.

100 tons, store addition, C. C. Murphy Co., Buffalo, to R. S. McMannus Steel Construction Co., Buffalo.

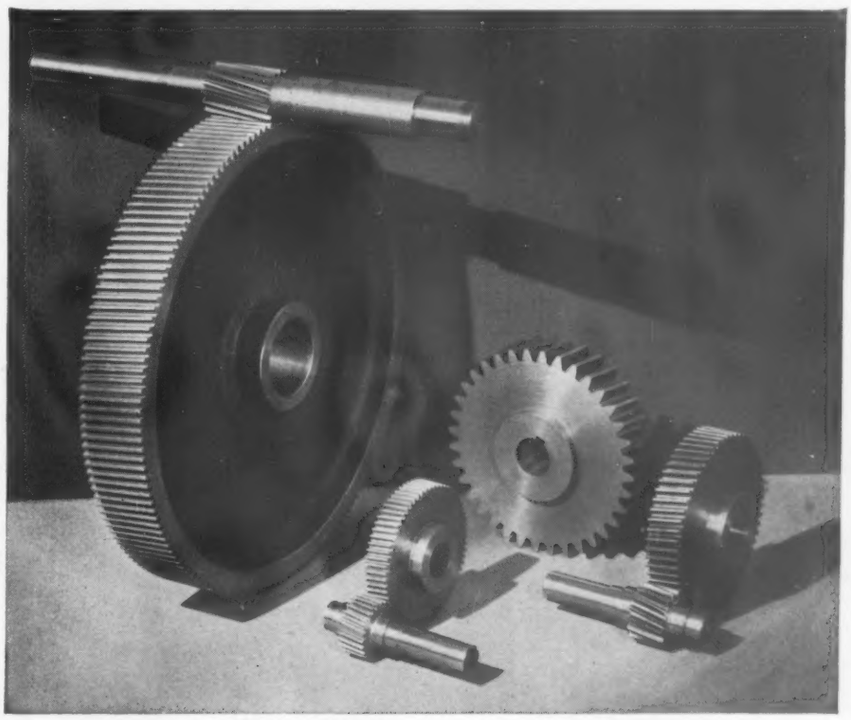
100 tons, bridge No. 192-C, El Paso county, Colorado, to Denver Steel & Iron Co., Denver.

Shape Contracts Pending

9000 tons, two bridges, over Black creek, Lorain, O.; bids approximately April 30.

9000 tons, piling, bridge substructure, Potomac river, Bob's Creek, Md.; Merritt-Chapman & Scott, New York, low.

6500 tons, miscellaneous, mostly structural steel tunnel supports, contract



6 PLUS FACTORS

★ Here are a few important features of Horsburgh & Scott Helical gears that benefit every user.

1. The outside diameter, faces, bores and ends of the hubs are smoothly finished to the correct size.
2. The teeth are accurately generated with the correct amount of backlash for quiet, smooth operation.
3. The pitch line is absolutely concentric with the bore.
4. Whether arm or web construction the pattern is chosen not alone for strength but also for pleasing appearance.
5. Rim and arms or web are extra heavy for the pitch.
6. Hub diameters are generously large to allow for reboring and to eliminate the key patch.

Your name on Company Letterhead brings you a Complete Catalog

THE HORSBURGH & SCOTT CO.

GEARS AND SPEED REDUCERS

5112 HAMILTON AVENUE • CLEVELAND, OHIO, U. S. A.

318, Delaware aqueduct, Ulster county, New York, board of water supply, New York city, project; Pleasantville Construction Co., New York, low.

4000 tons, galvanized structural steel transmission towers, Wilson-Pickwick-Memphis 220 kilovolt transaction line, bids March 28, Tennessee Valley authority, Knoxville; inquiry is for designing, furnishing, fabricating, galvanizing and delivery.

2000 tons, buildings, Celanese Corp., Narrows, Va.; new bids March 17.

1800 tons, two bridges, Youngstown, O.; bids approximately April 15.

1300 tons, Meadowbrook hospital, Staten Island, N. Y.; bids March 22.

1175 tons, six-span plate girder overpass, Cottage Farms bridge, Cambridge, Mass., Coleman Bros. Corp., Boston, low.

1100 tons, Margaret Hague hospital building, Jersey City, N. J.; Lehigh Structural Steel Co., Allentown, Pa., low.

1000 tons, sheet piling, East river drive, New York; bids March 16, contract four.

900 tons, factory building, Link-Belt Co., Indianapolis.

850 tons, ward building 3, Gallinger hospital, Washington; Bahen & Wright, Washington, low.

800 tons, Michigan state college auditorium; bids in, also 200 tons of bars.

607 tons, highway bridge, Mooringsport, La.; bids March 15.

515 tons, state bridge over Walnut river, Cowley county, Kansas.

400 tons, high school, Newark, N. Y.; bids March 22.

400 tons, hospital, Rome, N. Y.; bids March 11.

400 tons, Buyler junior high and elementary school, Trenton, N. J.; bids March 21; also includes 300 tons of bars.

400 tons, underpass, Lorain, O., Baltimore & Ohio railroad; bids March 15.

380 tons, U. S. treasury department, post office building addition, Los Angeles; bids in.

360 tons, Willet street underpass, Memphis, Tenn.

307 tons, University avenue crossing, Berkeley, Calif.; Heafey Moore and Frederickson & Watson Construction Co., 873 Eighty-first avenue, Oakland, Calif., low on general contract.

300 tons, state highway bridge, Princeton, N. J.

300 tons, Ft. Greene health center, Brooklyn, N. Y., for city of New York.

275 tons, school, Hyde Park, N. Y.

275 tons, school, Andover, N. Y.; bids March 28.

270 tons, piling, East Erie avenue bridge, river piers, City of Cleveland; bids in.

235 tons, high school, Northampton, Mass.

220 tons, Cross Island parkway grade separation, New York.

212 tons, for 1000 cubic foot barge, Panama, schedule 3433; bids March 15, also includes 463 tons of plates.

200 tons, home economics building, University of Kentucky, Lexington, Ky.

200 tons, Margaret Murray school, Washington; Skinker & Garrett, Washington, low; bids March 7.

200 tons, three-span I-beam bridge, 252 feet long, Park street across Roaring Branch, Bennington, Vt.; bids March 17, H. E. Sargent, commissioner of highways, Montpelier.

200 tons, garage, Brooklyn, N. Y.; bids to procurement division, New York.

200 tons, grade crossing, Linden Boulevard, Queens, N. Y.

200 tons, alterations, Elks home, Brooklyn, N. Y.; for board of education, New York.

170 tons, grade crossing, Inkster, Mich., Michigan Central railroad; bids March 27.

150 tons, floor and cover plates, Youngstown Sheet & Tube Co., Indiana Harbor, Ind.

150 tons, school, Cassadaga Valley, N. Y.; bids March 21.

145 tons, Fairview-Viola school, board of education, Poughkeepsie, N. Y.

125 tons, theater, Philadelphia; bids March 8.

125 tons, school, Nunda, N. Y.; Werner-Spitz, Rochester, N. Y., low.

120 tons, radio station building, United States coast guard, Fairfax county, Virginia.

115 tons, tide bridge, navy yard, Washington; Diamond Construction Co., Washington, low; bids March 8.

114 tons, over-crossing of Western Pacific Railroad tracks, Oroville, Calif.; Bethlehem Steel Co., Alameda, Calif., low.

114 tons, Sand Point, Seattle, naval air station; bids in to purchasing officer Puget Sound Navy yard.

110 tons, two 84-foot I-beam bridges, North river, Whitingham, Vt.; bids March 17, H. E. Sargent, commissioner of highways, Montpelier.

105 tons, Rines Hill crossing over Maine Central railroad, Augusta, Me.; bids March 22, Maine state highway commission, Augusta, Max L. Wilder, bridge engineer.

100 tons, state bridge, Bellingham-Blackstone, Mass.; bids March 21.

Unstated tonnage, grade eliminations, plate girder spans, contract SC-39-5, Queens, N. Y.; bids March 22, park department, New York.

Unstated, $1,630,000 federal courthouse at Seattle; bids to treasury department, April 7.

Unstated, special type trucks and gate frames for Coulee Dam; bids to Denver, March 15 and 16.

Unstated tonnage, underpass, Youngstown, for Baltimore & Ohio railroad.

BY THE BOX OR BY THE MILLION!

Plus value IS OBVIOUS IN CAP SCREWS » » YOU GET from us

• Look over samples selected at random from your next shipment of Cleveland Cap Screws. They will not merely meet specifications for they invariably exceed them. Our own standards are very high—and we manufacture cap screws by the Kaufman Process, *patented*, our own plant development. Tensile strength is greatly increased by this method, and so also is thread strength. Thread accuracy of Cleveland Cap Screws is long established as a uniformly dependable Class 3 fit. These fine cap screws will speed up your assemblies. Ask for current price list and Catalog E. THE CLEVELAND CAP SCREW COMPANY, 2935 East 79th Street, Cleveland, Ohio.

Address the Factory or Our Nearest Warehouse:

CHICAGO, 726 W. Washington Blvd.
PHILADELPHIA . 12th & Olive Sts.
NEW YORK . . . . 47 Murray Street
LOS ANGELES . 1013 East 16th St.

CLEVELAND CAP SCREWS
SET SCREWS • BOLTS AND NUTS

Reinforcing

Reinforcing Bar Prices, Page 81

New York—For the northerly connection, Harlem river speedway, George Washington bridge, through Highbridge park, New York, 1550 tons are required, closing March 28 with the Port of New York authority. New inquiry is up slightly, notably in New Jersey where close to 1000 tons pend.

Pittsburgh — More inquiries are appearing and competition continues very keen. Considerable proportion of the awards covers public projects, such as bridge approaches, etc.

Cleveland — Most awards are well under 100 tons. Fabricators anticipate moderate improvement

through March and April, mostly in public projects, although some gain in inquiries from private sources is expected. Fabricators' backlogs are low.

Chicago — General demand is expanding and a slight gain in total tonnage pending is noted. Large tonnages are seen in the offing and spring weather is expected to bring more rapid closings on jobs already pending.

Boston—Reinforcing awards are mostly in small lots, although such orders are mounting. Inquiry and pending work is also heavier with requirements for four sections, North Metropolitan sewer district, Boston, taking a substantial tonnage.

Philadelphia—Several jobs involving less than 1000 tons remain before the trade, including two warehouses, Richmond, Va., taking 1100 tons. However, the market is none too active and the price structure finds little support.

San Francisco — After several very active weeks, demand has declined somewhat with awards aggregating only 1674 tons. This brought the total this year to 46,860 tons, compared with 20,477 tons in 1938. Bids have been opened on 500 tons for a post office and court house at Fresno, Calif. and on 390 tons for reconstructing the Calaveras dam stilling basin near Sunol, Calif.

Reinforcing Steel Awards

9381 tons, Units 3 and 4, Lake Washington pontoon bridge, Seattle, to Bethlehem Steel Co., Seattle; Pontoon Bridge Builders, Seattle, general contractors. Reported in March 6 issue to unnamed interest.

1000 tons, bridge foundations, Cape May, N. J., to Bethlehem Steel Co., Bethlehem, Pa.; through Brann-Stewart Corp., Philadelphia.

530 tons, senior high school, Rockford, Ill., to Bethlehem Steel Co., Bethlehem, Pa.; by C. D. Johnson & Son, general contractor, Chicago.

500 tons, building for Sears, Roebuck & Co., Pico and West boulevards, Los Angeles, to unnamed interest.

400 tons, sewage works, Fort Wayne, Ind., to Truscon Steel Co., Youngstown, O.; Bass Engineering & Construction Co., Fort Wayne, Ind., contractor.

300 tons, barracks, Fort Jay, New York, to Capital Steel Co., Brooklyn; through Eureka Fireproofing Co., New York, subcontractor.

288 tons, bureau of reclamation, invitation A-33,819-A, Buena, Wash., to Northwest Steel Rolling Mills, Seattle.

280 tons, Roza diversion dam, Washington state, to Northwest Steel Rolling Mills, Seattle.

225 tons, coast guard station, Curtis Bay, Md., to American Steel Engineering Co., Philadelphia.

190 tons, Washington state span, Snohomish county, to Bethlehem Steel Co., Seattle; A. D. Belanger, Seattle, general contractor.

180 tons, Carter road bridge project, Cleveland, to Republic Structural Steel Co., Cleveland; through Lombardo Bros. Co., Cleveland.

150 tons, bridge, Park avenue, Waterloo, Iowa, to Waterloo Construction Co.; A. Guthrie, contractor.

150 tons, building for Archer, Daniels-Millard, Decatur, Ill., to Laclede Steel Co., St. Louis; McKinzie-Hague, contractors.

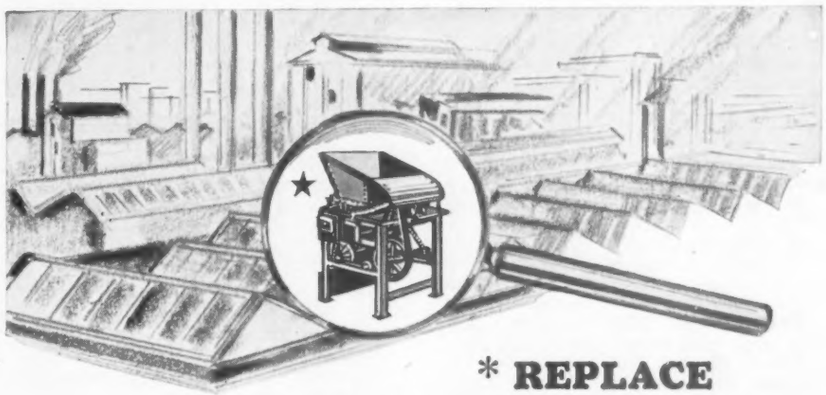
150 tons, building for Eastman Kodak Co., Los Angeles, to unnamed interest.

140 tons, warehouse, Muskogee, Okla., to Paterson Steel Co., Tulsa, Okla.

Concrete Bars Compared

	Tons
Week ended March 11	5,273
Week ended March 4	16,578
Week ended Feb. 25	6,940
This week, 1938	4,288
Weekly average, year, 1938	6,959
Weekly average, 1939	12,999
Weekly average, February	8,268
Total to date, 1938	52,553
Total to date, 1939	113,394

Includes awards of 100 tons or more.



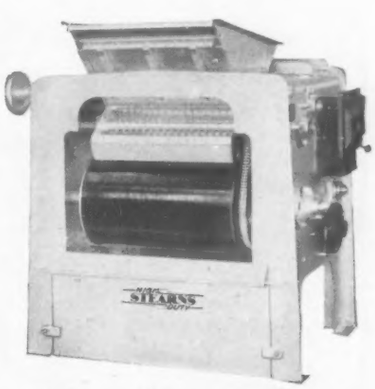
* REPLACE
OBSOLETE MACHINERY
THE FOE OF PROFITABLE PRODUCTION

Modern production is stream-lined. It must go places fast, and do an efficient and economical job. Being able to shave costs with better machinery many times means landing an important order.

Stearns modernized and improved magnetic separating equipment, magnetic clutches and brakes and other special magnets, will do a better production job for you.

Throw out obsolescent machinery that is keeping you from heading the parade. Installing new and up-to-the-minute Stearns magnetic equipment will prove a definitely profitable investment, paying for itself many times.

Investigate Stearns magnetic equipment now!



This improved Stearns magnetic separator replaced an obsolete machine with gratifying results in a prominent mid-west industrial plant. Name on application.

WRITE FOR OUR INTERESTING BULLETIN,
THE HOUSE OF MAGNETIC MAGIC.

STEARNS MAGNETIC MFG. CO.
SEPARATORS DRUMS ROLLS CLUTCHES BRAKES MAGNETS
Formerly Magnetic Mfg. Co. HIGH STEARNS DUTY
LARGEST EXCLUSIVE BUILDERS OF MAGNETIC EQUIPMENT

650 So. 28th Street Milwaukee, Wis.

140 tons, warehouse and industrial building, Tulsa, Okla., to Patterson Steel Co., Tulsa, Okla.

140 tons, garage, Des Moines, Iowa, to Des Moines Steel Co., Des Moines, Iowa.

110 tons, for city of Fullerton, Calif., to Truscon Steel Co., Los Angeles.

100 tons, physical science building, Bloomington, Ind., to Bethlehem Steel Co., Bethlehem, Pa.; J. E. Erickson Co., contractors.

100 tons, post office, Schofield Barracks, T. H., to unnamed interest.

100 tons, south addition, University of Wisconsin, Camp Randall stadium, Madison, Wis., to Calumet Steel Co., Chicago.

100 tons, school, East Bloomfield, N. Y., to American Bridge Co., Pittsburgh.

Reinforcing Steel Pending

3700 tons, Chicago subway section D-6; bids in.

1445 tons, United States engineer, Huntington, W. Va., schedule 240; bids March 15.

1100 tons, substructure, bridge over Potomac river, Bob's Creek, Md.; Merritt-Chapman & Scott, New York, low.

679 tons, University avenue crossing, Berkeley, Calif.; Heafey Moore and Fredrickson & Watson Construction Co., 873 Eighty-First avenue, Oakland, Calif., low on general contract.

610 tons, two steam plants for Pacific Gas & Electric Co. at Avon and Martinez, Calif.; general contract to Dinwiddie Construction Co., Crocker Bldg., San Francisco.

600 tons, warehouse, city of Richmond, Va.; bids March 23.

550 tons, post office and court house, Fresno, Calif.; bids opened.

500 tons, addition to post office and court house, Los Angeles; bids postponed until March 15.

500 tons, warehouse, United States Tobacco Co., Richmond, Va.; bids March 14.

500 tons, public library, city of Toledo, O.; Geo. A. Fuller Co., Chicago, low.

492 tons, sewage treatment plant, Marshalltown, Iowa; Lindh-Gustafson & Klopfer, Minneapolis, low.

458 tons, bars and mesh, bridge near Hough street, Los Angeles; bids March 23.

450 tons, state highway project, Connecticut; bids March 13.

445 tons, 12 north approach piers, Raritan river bridge, route 35, section 14, Sayreville, N. J.; bids March 22, E. Donald Sterner, state highway commissioner, Trenton; also 45 tons, mesh in highway project, Salem county.

435 tons, paving, Southern parkway, Queens, N. Y.

435 tons, city water reservoir, Eugene, Oreg.; H. J. Adler Construction Co., Yakima, Wash., general contractor.

400 tons, dike and flood wall, Springfield, Mass.; John O'Connell's Son Co., Holyoke, Mass., low.

400 tons, filtration plant, Minneapolis.

390 tons, reconstructing stilling basin, Calaveras dam, near Sunol, Calif.; bids opened.

300 tons, grade crossing, Great Kills, Staten Island, N. Y.

362 tons, Pennsylvania turnpike, sections 13 and 14, Bedford-Fulton counties, Pennsylvania.

300 tons, post office, Riverside, Calif.; Robt. E. McKee, Ltd., 4700 San Fernando road, Los Angeles, low on general contract.

300 tons, apartment, Well street, Milwaukee.

230 tons, bulkhead, East river, New York; bids March 16, contract four.

200 tons, bridge, city of Elgin, Ill.

200 tons, school, Newark, N. Y.; bids March 22.

190 tons, foundation for power station, Niagara Hudson Power Corp., Oswego, N. Y.

160 tons, sewage treatment plant, Franklin, Pa.

150 tons, plant quarantine building, Hoboken, N. J.; White Construction Co., New York, low.

150 tons, post office, Venice, Calif.; bids opened.

130 tons, approaches, Fleetwood viaduct, Mt. Vernon, N. Y.; bids March 14.

120 tons, women's dormitories, units A and B, Ohio State university, Columbus, O.; E. Elford & Son, Columbus, contractor.

100 tons, detention home, Columbus, O.; Frank L. Matthaes, Columbus, contractor.

100 tons, men and women's dormitories, Ohio university, Athens, O.; Robert H. Evans Co., Columbus, contractor.

100 tons, sewer, Springfield, Mass.; Delisco Construction Co., New York, low.

Pig Iron

Pig Iron Prices, Page 82

Pittsburgh — Some improvement appears in demand for foundry and malleable grades of pig iron. Compared with February, inquiries are more numerous and more sales have been made, largely for small lots and at the unchanged price of $21 for both No. 2 foundry and malleable.

Cleveland — Releases are moderately heavier, coming from both production and jobbing plants and being fairly well distributed among producers of light and heavy castings. New business continues light, and although stocks in hands of foundries are relatively small, tonnage still due against old contracts is restricting orders. This circumstance has supported expectations of a continuation of the current $21 base in No. 2 foundry and malleable into second quarter.

Chicago—Shipments are approximately 10 per cent over the same period in February. Month as a whole will comfortably exceed last month, it is estimated. Foundry melt is slightly improved.

Boston—While the reaction among pig iron consumers in New England is favorable, the recent reduction in Everett base prices by 75 cents per ton, placing that point on a level with eastern Pennsylvania, is not causing material increase in buying, although some spotty im-

provement is noted. Mystic Iron Works has been considering this move for some time and will go into blast this spring, probably by May 1. Delivered prices to practically all consuming points in this district are down in line with the base reduction.

New York—With prices generally reaffirmed for second quarter, pig iron buying shows little variation and is confined principally to single carlots. Specifications from some directions influenced by building construction and machine tools are heavier, but demand elsewhere is quiet. Export markets include a fair number of small inquiries, but orders are scant.

Philadelphia — With prices reaffirmed, consumers find little reason to buy ahead. Stocks of most foundries are low, while the average melt is tending upward. Export demand is slow, with prices depressed.

Buffalo — Shipments so far in March have been slightly heavier than a month ago. Consumers are covering only immediate requirements, and reaffirmation of prices by Hanna Furnace Corp. is not expected to influence forward coverage. Foundry operations range from one to five days weekly, the average for the district being around three to four days.

Cincinnati — Some pig iron consumers are covering for minimum needs next quarter, while others still have considerable tonnage due against old contracts at lower than current prices. Quotations are firm on new business. Deliveries hold about the rate of recent weeks. Production of castings for machine tools continues outstanding, with jobbing business quiet.

St. Louis — Second quarter books have been informally opened by pig iron sellers, with prices unchanged. Sellers' backlogs have been reduced materially the past few months and several large consumers have about exhausted old contracts. This has resulted in an increase in small-lot purchases for prompt shipment.

Toronto, Ont. — Pig iron sales are steady in small lots. Producers are opening second quarter books at unchanged prices, a recent report of a $3 reduction having been eroneous. So far melters have shown little interest in forward contracting.

Tin Plate

Tin Plate Prices, Page 80

Reaffirmation of tin plate prices for delivery next quarter has been announced by leading producers. This continues the practice instituted late last year of setting prices for only three months ahead instead of through the season.

Extension of quotations has been followed by covering of requirements by some consumers, and there are expectations of coming expansion over recent production of slightly under 55 per cent. Carryover of canned goods, considered heavy three months ago, is said to be down near ordinary volume, while tin plate stocks of canmakers are reported relatively moderate.

Scrap

Scrap Prices, Page 84

Pittsburgh — Mills continue hesitant to place new business, while dealers with yard stocks are holding to their accumulations in the view that current quotations are not attractive. Price adjustments are minor, involving 25-cent advances on mixed borings and turnings and short rails.

Cleveland — Prices are stronger here and at Youngstown. With current quotations bringing out scrap slowly, higher figures are regarded not unlikely on subsequent mill purchases. One consumer bought an estimated 25,000 tons of heavy melting steel for Warren, O., delivery at a reported price of $15.50 for No. 1 material, which constituted a relatively small portion of the total tonnage.

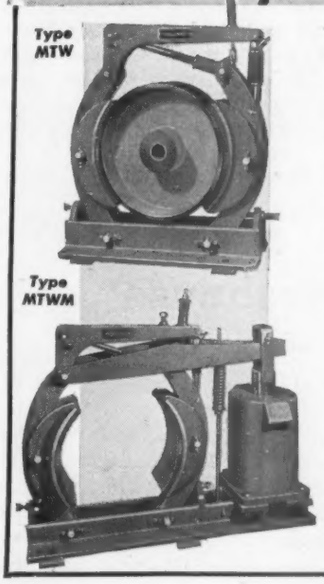
Chicago—Little scrap buying by mills is looked for the remainder of this month. Most steelworks are accommodated by current supplies or have sufficient tonnage due against old orders. Prices are steady, with No. 1 steel continuing $14 to $14.50 on the basis of last sales. Dealer-broker transactions are within this range.

New York—Interest is centered on the visit here of representatives of the European scrap cartel, which is expected to purchase within the next ten days or two weeks its second quarter requirements of about 400,000 tons. Brokers will resist attempts of the cartel to obtain a larger percentage of No. 1 steel in its coming purchase. The amount in the past has averaged 25 per cent. While the last purchase brought $15 f.a.s. for No. 1 steel, the stronger market today indicates

Specify HYDRAULIC-ACTUATED

WAGNER INDUSTRIAL BRAKES

WHERE DEPENDABLE SERVICE IS *Essential*



Ruggedness characterizes every construction detail of Wagner Hydraulic-Actuated Industrial Brakes —Welded steel parts . . . Hardened pins and bushings . . . and Cannonite brake wheels, are just a few of their many advantages. They are built to "stand up" under the kind of service that usually "takes the life" out of ordinary brakes.

Type MTW is for ordinary bridge service, the type MTWM is equipped with spring-set shunt solenoid release to provide locking device where desired.

If you want low brake maintenance of Cranes, Coke Pushers, Transfer Cars and similar equipment—specify Wagner Brakes. Write today for complete information.

138-3A

WAGNER ELECTRIC CORPORATION
INDUSTRIAL BRAKE EQUIPMENT
4904 Baum Blvd. Pittsburgh, Pa.

IT'S EASY TO HANDLE SHEET STEEL

5 ton Lifter in manufacturing plant

C-F SHEET LIFTERS

SAFER
Tong action and automatic take up safely grip loads. End control protects operator.

BETTER
High grade stock handled without surface scratches or damage to edges.

CHEAPER
Handle packs of sheet steel instead of single sheets. Sheet storage room reduced.

FASTER
Jaw adjustment made in a few seconds. One man control.

20 ton cap. Lifter in 80" strip mill

Also made for handling tinplate, ingot molds, paper rolls, pipe, tubing, castings, tote boxes, flasks, skids, etc. Capacities 2 to 60 ton. Special designs to suit your requirements.

Write for bulletin SL-14.

CULLEN-FRIESTEDT CO.
1308 S. Kilbourn Ave.
Chicago, Ill.

Locomotive Cranes-Car Pullers - Buckets - Welding Positioners

at least $16 will have to be paid.

Philadelphia — The market shows signs of firming, but so far this is not reflected in quoted prices. No. 1 steel is none too plentiful, and exporters find it necessary to pay $15.50, Port Richmond, an advance of 50 cents. No. 2 steel generally is $13.50 for export, but more has been paid in some instances. Two eastern mills are paying $15 for No. 1 locally, but this is not available outside the so-called coal regions. Reports that the European cartel will place large orders have dried up dealer offerings.

Buffalo—Despite absence of new sales, dealers are taking a firmer price stand in view of the stronger situation in other districts. A few sales of cast scrap at higher prices also tend to bolster sentiment, although with ingot production here lagging behind the national average, little possibility is seen of heavier scrap buying immediately.

Detroit — The trade is more bullish, but improvement to date has been largely conversational and lacks any substantial buying to justify increased prices. However, blast furnace grades are higher on recent sales, and a few other grades have been marked up. Heavy melting steel is unchanged.

Cincinnati — Improved sentiment among dealers and brokers has advanced scrap quotations 25 to 50 cents. Largest increases are on the heavier grades. Contributing to the upturn is the fact better grades are rather scarce and closely held.

St. Louis — Scrap still has an easy tone. One mill purchased about 2000 tons of No. 2 steel at current prices and another took several carlots on the same basis. Otherwise business is quiet.

Toronto, Ont.—Scrap trading has tapered further, but a pickup in demand is looked for in late March or early April. Some consumers have announced they will be out of the market until next month. Cast scrap demand is steady, while heavy melting steel has a ready market in the Hamilton area. Prices are unchanged.

Warehouse

Warehouse Prices, Page 83

Cleveland — Sales hold at the level of the past week or two, but gain in inquiries and definitely better consumer sentiment enhance the outlook. Small-lot buying predominates, with demand well diversified.

Chicago — A small upturn in warehouse steel business has been noted. Estimates still indicate that March business will surpass February, possibly bettering January volume.

Boston — Expected upturn after a slow February has not materialized. Buying, however, is almost entirely for immediate needs with consumers not yet anticipating spring requirements. Prices on some items are somewhat irregular.

New York — Usual improvement in warehouse volume expected in March has not developed. Consumers generally buy as needed in small lots. Warehouse prices, as a rule, are firmer with only scattered shading on most products, notably pipe, being worked off.

Philadelphia—Sales are improving, some warehouses reporting March business 20 per cent ahead of February and well above last year. Improvement is said to reflect both general gains in business as well as the seasonal factor. Prices are slightly steadier.

Buffalo—While some distributors report minor improvement for the first week of March, warehouse sales in the aggregate are showing scarcely any change.

Cincinnati — Warehouse sales are steady, without seasonal gains. Coal mining needs account for considerable tonnage although industrial demand is taking the heaviest tonnage.

Steel in Europe

Foreign Steel Prices, Page 83

London—(*By Cable*) — Pig iron markets in Great Britain continue quiet but steelworks generally are active. Large orders have been booked recently for defense and for industrial use. Some idle plant is being recommissioned in the Middlesbrough district. Shipbuilding continues to lag. Sheets are active in the domestic market and exports of tin plate are at a satisfactory rate. Stanton Iron Works Co. Ltd. has booked a contract for 15,000 tons of cast iron pipe for Egypt.

In spite of a shorter month February production of pig iron and steel ingots showed sharp gains from January, reflecting the heavier demand. Steel ingot production totaled 971,100 gross tons, compared with 811,700 tons in January and pig iron 516,000 tons compared with 500,500 tons.

The Continent reports active semi-finished steel exports to Great Britain, with other descriptions quiet. The tube cartel extension is to terminate in 1940.

Financial Statements

(*Concluded from Page* 25)

Dec. 31, unexpended balance on uncompleted authorized construction was approximately $1,500,000.

Taxes paid last year totaled $4,379,452, compared with $6,820,837 in 1937. No dividends were declared in 1938 on the 7 per cent cumulative preferred stock.

RUSTLESS REPORTS PROFIT

Rustless Iron & Steel Corp., Baltimore, reports net profit of $81,110 for 1938. In 1937 net profit was $713,139. Net sales last year aggregated $2,348,298, compared with $4,193,461 in the preceding year. Company completed major part of its expansion program last year. Expenditures for this purpose amounted to $140,693, bringing the total so expended to $1,902,339.

Bolts, Nuts, Rivets

Bolt, Nut, Rivet Prices, Page 81

With bar and rod prices reaffirmed for second quarter, bolt, nut and rivet producers are expected to extend their quotations into next period. Business has shown little change lately, some districts reporting maintenance of the February rate, which was slightly ahead of the January daily average, others noting a slight letdown. Spring railroad track work, building construction and further expansion in automobile output are expected to stimulate demand in the near future.

Ferroalloys

Ferroalloy Prices, Page 82

New York — Ferromanganese prices are being reaffirmed for second quarter at $80, duty paid, Atlantic and Gulf coast. Quotations on other leading ferroalloys also are being extended. This action is in accordance with general trade expectations.

Shipments of ferromanganese are being well sustained, in line with the trend in ingot production. Producers, as a matter of fact, look for some increase before the close of the month and this possibility combined with the fact that the month is longer, with no holidays, lends promise of a better movement in March as compared with February.

Domestic spiegeleisen, 19 to 21 per cent, is holding at $28, Palmerton, Pa., and 26 to 28 per cent, at $33.

Nonferrous Metals

New York — Sales and prices of domestic nonferrous metals improved last week due to an uptrend

Nonferrous Metal Prices

Spot unless otherwise specified. Cents per pound

	Copper										
Mar.	Electro, del. Conn.	Lake, del. Midwest	Casting, refinery	Straits Tin, New York Spot	Straits Tin, New York Futures	Lead N. Y.	Lead East St. L.	Zinc St. L.	Aluminum 99%	Antimony Amer. Spot, N.Y.	Nickel Cathodes
4	11.25	11.37½	10.47½	46.15	46.15	4.75	4.60	4.50	20.00	11.25	35.00
6	11.25	11.37½	10.50	45.95	46.00	4.75	4.60	4.50	20.00	11.25	35.00
7	11.25	11.37½	10.55	46.00	46.00	4.75	4.60	4.50	20.00	11.25	35.00
8	11.25	11.37½	10.60	46.12½	46.15	4.75	4.60	4.50	20.00	11.25	35.00
9	11.25	11.37½	10.62½	46.35	46.35	4.85	4.70	4.50	20.00	11.25	35.00
10	11.25	11.37½	10.65	46.35	46.35	4.85	4.70	4.50	20.00	11.25	35.00

MILL PRODUCTS

F.o.b. mill base, cents per lb. except as specified. Copper brass products based on 11.25c Conn. copper

Sheets

Yellow brass (high) 17.31
Copper, hot rolled 19.37½
Lead, cut to jobbers 8.00
Zinc, 100 lb. base 9.75

Tubes

High yellow brass 20.06
Seamless copper 19.87½

Rods

High yellow brass 12.62
Copper, hot rolled 15.87½

Anodes

Copper, untrimmed 16.62½

Wire

Yellow brass (high) 17.56

OLD METALS

Nom. Del. Buying Prices

No. 1 Composition Red Brass

New York 6.62½-6.87½
Cleveland 7.00-7.25
Chicago 6.62½-6.87½
St. Louis 6.62½-6.87½

Heavy Copper and Wire

New York, No. 1 ..... 8.62½-8.75
Cleveland, No. 1 ..... 8.25-8.50
Chicago, No. 1 ..... 8.25-8.50
St. Louis 8.12½-8.37½

Composition Brass Borings

New York 5.87½-6.12½

Light Copper

New York 7.12½-7.37½
Cleveland 6.50-6.75
Chicago 6.62½-6.87½
St. Louis 6.62½-6.87½

Light Brass

Cleveland 3.75-4.00
Chicago 4.25-4.50
St. Louis 3.75-4.00

Lead

New York 4.10-4.35
Cleveland 3.50-3.75
Chicago 3.50-3.75
St. Louis 3.50-3.75

Zinc

New York 2.50-2.62½
Cleveland 2.25-2.50
St. Louis 2.12½-2.37½

Aluminum

Borings, Cleveland 6.50-6.75
Mixed, cast, Cleveland 7.75-8.00
Clips, soft, Cleveland 15.25-15.50
Mixed cast, St. Louis 7.00-7.25

SECONDARY METALS

Brass ingot, 85-5-5-5, less carloads .. 11.00
Standard No. 12 aluminum 12.50-13.00

INVESTIGATE THE NEW

NUMBER 2 OF A SERIES

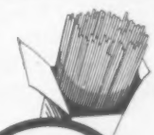
Eureka Tool Steel Welding Rods

No. 70-W—NON-SHRINK
No. 71-M—NON-SHRINK
No. 8510—WATER HARDENING
No. 1215—AIR HARDENING

EUREKA tool steel welding rods give amazing performances in the manufacturing and repairing of dies, worn or fractured tools, surfacing carbon and alloy steels, shear blades, etc. They pay off in results.

No. 8510 WATER HARDENING alloy electrode is used principally for reconditioning water hardened steel tools, dies, cable bits, track work, etc. It will produce a deposit metal comparable to the best carbon vanadium type of water hardening steel. As in the cases of other EUREKA tool steel welding rods, No. 8510 alloy steel electrode is the development of extensive experimentation. It has to prove itself to US before we pass it on to you.

No. 1215 AIR HARDENING electrode has been found particularly useful for welding fractured or worn air hardened tool steel dies, forming composite dies having flame cut machine steel bases surfaced at wearing points with EUREKA air hardened electrodes. The ultimate utility and wide range of application of EUREKA TOOL STEEL WELDING RODS will be outlined at your request. Write for additional information concerning these and our other welding wire products.



A EUREKA Welding Wire for every purpose.

WELDING EQUIPMENT & SUPPLY CO.
2720 East Grand Blvd.
DETROIT, MICH.

in actual orders for fabricated products which accompanied an upward swing in prices abroad. Outstanding developments were the advance of $2 per ton in lead and the steady advance in resale and export electrolytic copper prices.

Copper — Inquiry in the producers' electrolytic market increased as offerings of resale metal tightened and prices advanced to around 10.95c, Connecticut. Export advanced to 10.35c, c.i.f. European ports, with sales reported at fractionally higher levels. A direct result of this improvement was the ½-cent rise in brass ingot base prices and the advance in smelters' bids for red metal scrap to 9.37½c for No. 1 heavy copper, or to the basis of 10.87½c for refined metal derived. The producers' market held firm at 11.25c, Connecticut, as sales increased to the best rate since October.

Lead — London prices advanced early in the week to a level which permitted sellers here to raise prices 10 points on Thursday to the basis of 4.70c, East St. Louis. Demand had been heavy for over a week and continued at a moderate rate at the new level. A letup in buying is now expected in view of the well-covered position of consumers.

Zinc — The market has shown signs of strength and demand has been at somewhat better rate. Shipments continue at a steady rate as galvanized sheet output increases further to over 61 per cent of capacity. Prices have firmed at the 4.50-cent East St. Louis level.

Tin — Operation of the output restriction and buffer pool agreements continue to exert a steadying influence on the markets. Straits spot fluctuated between 45.95c and 46.35c during the week. Buyers generally are awaiting the Committee's meeting on March 22 before taking a definite market stand.

Antimony — Buying interest continues dull with only routine business generally reported. Prices held at 11.25c, New York, for American spot in cases.

Reader Comments

(*Concluded from Page* 17)

that business and industry put a major emphasis on sales, combined with financing facilities, to the ultimate consumer. This, of course, means credit. But business already operates vigorously on the credit basis so long as it has faith in a reasonable profit.

Now if it is a question of faith, we are then dealing with a problem to be solved by psychology rather than economics. In the realm of psychology we encounter fear and other human weaknesses which are far more difficult to control from a practical or scientific standpoint than anything in the mechanics of finance or production. So we are back where we started.

Are the apparent injustices of capitalism due to a gross flaw in the code itself? Or, like Christianity, is the system sound, and its failure to prevent injustices due entirely to human frailty? I subscribe to the later opinion, and agree with the Man who said, "The poor you will have with you always."

W. E. GRAINGER
Asst. Supt. Coke Ovens,
Bethlehem Steel Co.,
Sparrows Point, Md.

Construction and Enterprise

Ohio

AMHERST, O.—Village, Clarence Cooper, mayor, has prepared preliminary plans and will be ready for bids about May 1 on construction of electric light and power plant to cost $145,000. Includes three diesel electric units, switchboard and auxiliaries. Consulting engineer, Floyd Brown, Marion, O. (Noted Dec. 26.)

ASHLAND, O.—City, W. A. Mason, mayor, has awarded contracts 1 and 3, and is preparing final plans for submission to state board of health about March 15 of the remaining work in construction of $140,000 sewage disposal plant. Involves primary settling tanks, motor-driven rotary distributors, chemical treatment tanks, incinerator, venturi meters, etc. E. D. Barstow, Akron, O., consulting engineer. (Noted Jan. 16.)

BRYAN, O. — Village, Charles Hester, clerk, is taking bids due about March 28, on a chemical-precipitation, activated-sludge sewage disposal plant. Champe, Finkbeiner & Associates, Toledo, O., consulting engineers. (Noted Feb. 6.)

DAYTON, O.—Army air corps, materiel division, contracting officer, Wright field, receives bids until 10 a.m., March 24 on 10 bench-type, motor-driven, 60-cycle drill presses, and on 1 bench-type, motor-driven 25-cycle drill press. (Circular 39-813.)

New York

NEW YORK—Royal Steel & Wire Corp., Queens, has been organized with $20,000 capital to fabricate steel building materials. Kauffman, Tuttle & McCarthy, 40 Wall street, New York, company representatives.

New Jersey

HOBOKEN, N. J.—General Foods Corp. plans to construct a plant costing about $250,000 to manufacture cans for coffee. To be completed around Aug. 1. Daily output estimated at 400,000 units.

Pennsylvania

INDIANA HARBOR, PA. — Youngstown Sheet & Tube Co., Pittsburgh, plans to install new electrical equipment, including two 6000-kilowatt motor generator sets in its plant here.

PITTSBURGH — Allis-Chalmers Mfg. Co., O. H. Falke, president, Milwaukee, plans to build a 150 x 500-foot factory addition costing an estimated $500,000 with equipment. F. G. Schmidt, Milwaukee, consulting engineer.

Michigan

DEARBORN, MICH. — Ford Motor Co. has awarded contract to J. A. Utley, 6031 Mansur street, Detroit, for construction of a hydroelectric plant costing $200,000 to serve its local branch plant. Shreve, Anderson & Walker, Detroit, engineers.

KALAMAZOO, MICH. — City, H. A. Bland, purchasing agent, takes bids until March 17 for piping, mechanical equipment and two electric centrifugal pumps as part of $207,000 waterworks improvements project.

Illinois

CHICAGO — Chicago, Wilmington & Franklin Coal Co. has plans in progress for installing a mechanical washing system costing more than $50,000 at its West Frankfort coal reclamation plant. Allen & Garcia, Chicago, consultants.

GENEVA, ILL.—Modern Steel Equipment Co., Harvey Knuth, president, maker of steel kitchen cabinets and sinks, has awarded contract for construction of a one-story, 86 x 179-foot factory addition to Charles E. Giertz & Son, Geneva.

Indiana

GARY, IND. — Gary sanitary board, Boyd Phelps, secretary, will soon receive bids, to close about April 11, for three motor-driven sewage pumping stations costing $210,000. Cole Engineering Co., South Bend, Ind., consulting engineer.

INDIANAPOLIS — RCA Mfg. Co., 501 North La Salle street, has plans in progress for construction of a one-story, 250 x 400-foot addition to its radio equipment plant, costing about $200,000 with machinery. Albert Kahn Inc., Detroit, engineer.

Georgia

HAPEVILLE, GA.—City has been allocated $127,097 federal funds for erection of a pump house, constructing water lines, sewers and hydrants. Total cost to be $160,939.

Mississippi

PASCAGOULA, MISS. — City receives bids March 13 for construction of a 150,000-gallon elevated steel water tank and other improvements and additions to its water system. L. C. Winterton, Pascagoula, consulting engineer.

North Carolina

MARION, N. C. — Marion Ridge Hosiery Mills Inc. will build a boiler house in connection with its projected expansion of local mill at cost of $60,000. Equipment purchases involved.

South Carolina

COLUMBIA, S. C.—State Rural Electrification authority, 1204 Main street, will accept bids March 20 for constructing 278 miles rural power transmission lines in five counties.

Tennessee

KNOXVILLE, TENN.—Tennessee Valley authority is receiving bids until

SPRINGS
STAMPINGS
WIRE FORMS

—made in any material and in any quantity. Extensive facilities—modern plant, complete tool room, heat treating, and spot welded or tapped assemblies.

IT WILL PAY YOU TO INQUIRE

Send us your specifications, blueprints, or samples for quotations.

M. D. HUBBARD, Pres. P. M. HUBBARD J. A. HUBBARD, Secy.

M. D. Hubbard Spring Company

645 Central Ave., Pontiac, Mich.

CROSBY FOR STAMPINGS

All our efforts have been concentrated on one product - - STAMPINGS - - for more than 40 years. We have made stampings, deep, intricate, heavy, light, large and small, for nearly every branch of industry.

THE CROSBY COMPANY

Buffalo, N. Y.

Pickling of Iron and Steel

—By Wallace G. Imhoff

Price Postpaid $5.00

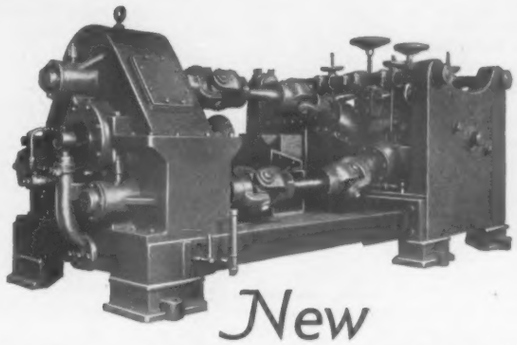
This book covers many phases of pickling room practice and construction and maintenance of pickling equipment.

THE PENTON PUBLISHING CO.

Book Department

1213 W. 3rd St. **Cleveland, O.**

429-S



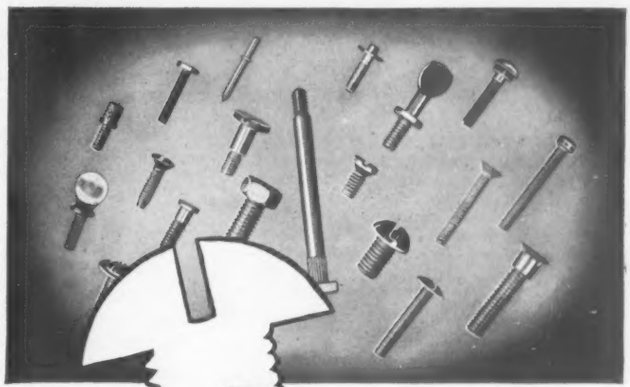
New

CONTINUOUS AUTOMATIC STRAIGHTENING *and* POLISHING Bar, Tube *and* Wire Machines

Combine all the necessary features of Speed, Precision, Capacity and Safety... Steel rolls set in Modart-Timken Bearings...Driving gears completely enclosed...Also Continuous Automatic Centerless Round Bar and Tube Turners, built in several types.

THE MEDART COMPANY • *General Offices and Works:* 3520 De Kalb St., St. Louis, Mo.

MEDART



PROTECT your product — and reduce costs — at every point where fastening devices are required by using screws and headed parts by PROGRESSIVE. Let PROGRESSIVE items, produced efficiently and accurately by the cold upset process, show you the way to substantial savings both in original costs and in assembly operations. In addition to standard machine screws and nuts, PROGRESSIVE is equipped to meet demands for made-to-order parts in any metal. We invite you to submit your problems to PROGRESSIVE specialists for intelligent, prompt solution.

QUALITY PROMCO BRAND

The PROGRESSIVE MFG. CO.

TORRINGTON · · · CONNECTICUT

March 21 for a 275-ton gantry crane for the power plant at Hiwassee dam, North Carolina.

Louisiana

BATON ROUGE, LA. — Dixie Electric Membership Corp., P. Smith, president, soon will take bids on constructing 362 miles of rural electric power transmitting lines costing about $309,000.

Missouri

HAMILTON, MO. — Farmers Electric co-operative, E. C. Wood, president, plans to build 600 miles rural electric lines costing $550,000. E. T. Archer & Co., Kansas City, Mo., consultants.

MANSFIELD, MO.—City has $17,000 in bonds available and will soon commence work on a complete sanitary sewer system costing $65,000.

Arkansas

BENTON, ARK.—First Electric Co-operative Corp. will soon call for bids on construction of 305 miles rural electric power lines serving consumers in five counties.

BLYTHEVILLE, ARK. — Mississippi County Rural Electrification co-operative, H. C. Knappenberger, president, has received an REA allotment of $200,000 for projected construction of 210 miles of rural electric power lines.

STAR CITY, ARK.—Lincoln County Co-operative association, W. Boyd Rowell, president, is receiving bids for constructing 165 miles rural transmission lines in two counties at cost of $75,000. Lund & Buxton Engineering Co., Little Rock, Ark., consultant.

Oklahoma

PURCELL, OKLA. — City is awarding contracts for projected improvements in its electric plant at total cost of $150,000. E. T. Archer & Co., Kansas City, Mo., consulting engineers.

Wisconsin

DARLINGTON, WIS.—Lafayette county, W. T. Penniston, highway commissioner, has awarded contract to Ray Echenrode, Kenosha, Wis., for constructing a one and two-story county highway maintenance and shop building, 68 x 200 feet. Will install considerable equipment, including lathes, drill press, forge, power hammer, bench grinder, arc welder, hoist, etc. Stanley Howe, Monroe, Wis., architect. (Noted Dec. 12.)

MEDFORD, WIS.—Medford Hoist Co. has been incorporated to manufacture hoists and auxiliary gear by Joseph Kalmon, Anton B. Anderson and Charles Rief.

Minnesota

GOODHUE, MINN. — Village, C. W. Wolf, clerk, is receiving bids until 2 p.m., March 17, on construction of a sewage treatment plant consisting of pump house and control room, clarifier units, digestor, chlorinating chamber, filter and other mechanical and electrical equipment. Certified check 10 per cent to accompany bid. Ealy G. Briggs, St. Paul, consulting engineer.

HALSTAD, MINN.—Red River Valley Co-operative Power association, George Henderson, secretary, has received $270,000 REA allotment in the projected construction of 271 miles rural electric power lines in three counties.

HENDRUM, MINN.—Village, George Grady, clerk, has received WPA approval in projected construction of a sewer system and sewage disposal plant to cost approximately $50,000. A. A. Hawkinson, Detroit Lakes, Minn., consultant.

MINNEAPOLIS—Consolidated Machine Works, 28 Northeast Fourth street, has been incorporated to engage in a general machine shop business by Theodore R. Tyler and associates.

MORRIS, MINN.—REA has allotted $201,000 to the Stevens-Big Stone Co-operative Power association, Victor Hanson, president, to finance construction of 195 miles rural transmission lines in two counties serving 458 consumers.

NEW RICHLAND, MINN. — Village, H. T. Tyrholm, recorder, is taking bids until 2 p.m., March 21, in the construction of sewers and a sewage treatment plant. Certified check 15 per cent to accompany bids. Druar & Milinowski, St. Paul, consulting engineers.

RED LAKE FALLS, MINN.—Red Lake County Electric Co-operative association, Joseph W. Ste. Marie, president, has $243,000 REA allotment in the construction of 221 miles of rural electric lines in three counties.

ST. PAUL—Donaldson Co. Inc., Frank A. Donaldson, president, manufacturer of air cleaners for truck and tractor motors, plans construction of a one-story addition to its factory as well as a new laboratory.

Texas

CUERO, TEX.—DeWitt County Electric Co-operative Association Inc., Thomas Schultze, representative, has plans under way for construction of 226 miles of rural electric power lines through two counties at cost of $172,000. William G. Morrison, Waco, Tex., consulting engineer.

KARNES CITY, TEX.—Karnes County Electric co-operative, J. R. Wier, secretary, proposes to build 226 miles of rural power lines to cost $188,000. William G. Morrison, Waco, Tex., consulting engineer.

SAN PATRICIO, TEX.—San Patricio Electric co-operative, Lloyd Neumann, secretary, has been allotted $195,000 by REA for constructing 254 miles rural electric transmission lines in three counties.

Kansas

KANSAS CITY, KANS. — Agar Mfg. Corp., Whippany, N. J., has plans to construct a box manufacturing plant, including boiler equipment, at cost of $125,000 with machinery.

North Dakota

KINDRED, N. DAK.—Cass County Electric co-operative, Max Strehlow, president, is receiving bids until 1 p.m., March 18, on the construction of approximately 230 miles of rural transmission lines in five counties. Certified check 5 per cent to accompany bids. M. S. Hyland, Fargo, N. Dak., consulting engineer.

Nebraska

COLUMBUS, NEBR.—American Carbide & Chemical Corp. has been incorporated with $150,000 capital stock to operate a chemical and carbide manufacturing plant by Frank A. Webb, W. T. Clark and Fred E. Tunnecliff.

LAUREL, NEBR.—City clerk will soon take bids on the installation of a new diesel engine and other replacements in the municipal power plant at cost of about $19,000.

STANTON, NEBR.—REA has allotted $155,000 to Stanton County Rural Public Power district, Peter Claussen, president, to finance construction of 148 miles of rural power lines in three counties.

Iowa

ALDEN, IOWA—City, G. F. Beigelow, clerk, is considering the construction of a rust removal plant for its waterworks system.

LIVERMORE, IOWA.—Coburn Machine Works has been incorporated with $10,000 capital to conduct a machine shop and deal in machinery and tools. Ted Hilbert, president.

OTTUMWA, IOWA—Johnston Lawn Mower Corp. has been organized with capital of $50,000 to manufacture lawn mowers and other mechanical articles, by Seth S. Barker and associates.

Colorado

DENVER — Bureau of reclamation, department of interior, takes bids to March 27 for two vertical-shaft alternating current generators to be installed at Boulder Canyon power plant. Specification 834.

Idaho

LEWISTON, IDAHO—Idaho County Light & Power association is receiving bids for construction of 158 miles of rural electric power lines for Grangeville REA project. Allotment of $190,000 has been made.

MOSCOW, IDAHO—City proposes to issue $65,000 bonds to finance construction of 500,000-gallon water tank and make other water system improvements, and will submit to voters at special election, April 4.

Arizona

TUCSON, ARIZ. — City water bureau will soon award contracts for three booster pumping units, auxiliary equipment and elevated steel tank and tower for its new Northside pumping station costing in all about $110,000.

Pacific Coast

GARDENA, CALIF. — City has plans to expend $170,000 for motor-driven sewage pumping station, including electric control equipment, discharge piping etc. Harold Barnett, city engineer.

LOS ANGELES — Worley & Co. has approved plans for erecting a one-story addition to its steel locker and shelf manufacturing plant. To be 60 x 160 feet, structure will cost $65,000 with machinery and power equipment. John and Donald Parkinson, Los Angeles, consulting engineers in project.

SPOKANE—Inland Empire Rural Electrification Inc. is taking bids March 14 for constructing 114 miles of power lines for which $90,000 is available.

Canada

VANCOUVER, B. C. — Canadian Bitumuls Co. Ltd., Leaside, Ont., plans to construct a new plant here which will cost approximately $150,000.

ROUYN, QUE. — Department of mines, Quebec, will soon accept bids for constructing a zinc smelter and sulphur and iron oxide plant estimated to cost about $1,500,000.

REGINA, SASK. — Consolidated Refinery Co. Ltd., G. Murray Bayne, representative, is drawing up plans for constructing an oil refinery estimated to cost $100,000.

READER Comments

Readers are invited to comment upon articles, editorials, reports, prices or other editorial material appearing in STEEL. The editors cannot publish unsigned communications, but at their discretion may permit a writer to use a pseudonym when a bona fide reason exists for withholding his identity. Letters should be brief—preferably not exceeding 250 words.

Unsound Tax System

To the Editor:

We have read with considerable interest your editorial on page 34, STEEL, Feb. 20, entitled, "A Suggested Approach to Re-Employment."

Having seen several published statements comparing the amount of taxes, per employe, paid by various companies in 1938 with 1932, we desired to see the same figures for our own company.

They were accordingly compiled and we find we paid taxes in 1932 amounting to $121.06 per employe and in 1938, with a substantially greater number of employes, we paid $476.36.

We understand that under some systems of government everybody works for the state, whose representative is the tax gatherer, and everybody derives his sustenance from the state. From the figures just quoted it appears that we, at least, are making rapid progress in that direction.

While the income tax has been discussed endlessly and is pushed aside in discussions by various other specific kinds of taxes, the thought occurs to us that the income tax itself, assessed at a level rate over all incomes, on a pure basis of ability to pay, is perhaps as equitable a tax as can be devised.

It should never have been set up so as to levy an additional tax on mere bigness or size. This, however, is exactly the end product of the various ascending "brackets" on which income taxes are assessed. The system then works out to a point where an individual or an institution frequently has to forego a profit merely because if the deal or trade were made, the tax gatherer would get a major portion of the profits made thereby.

With the penalty of the upper brackets removed and income tax assessed only on a level rate we believe trades would be made that are now held up and new activities instituted to so great an extent as materially to relieve all unemployment in a period no longer than 60 or 90 days. If this be true, it follows that your statement: "Unsound tax system is principal deterrent to larger employment," is obviously true.

M. G. STEWART

President,
Pelican Well Tool & Supply Co.,
Shreveport, La.

Will Bear Much Thinking

To the Editor:

Suggestion by "Still Thinking" in STEEL, Feb. 27, that prices be reduced when industrial activity reaches 80-90 per cent, on the ground that cost per unit decreases, compared with a lower production rate, sounds reasonable on the surface. Comment by "Also Thinking" in STEEL, March 6, raises the question whether the converse would apply, increasing prices when production goes low. The latter would seem reasonable from the standpoint of increased unit cost in times of small production.

If these two courses could be followed the steel industry would have no periods of heavy deficits or large earnings, characteristic of the financial statements in recent years. This would be basing selling price on unit cost, a reasonable procedure, apparently, but directly opposed to the old-fashioned law of supply and demand.

Suppose production of steel in response to consumer buying was gradually rising and consumer needs indicated continued increase. Would not each buyer limit his purchases to immediate needs, hoping the other fellow would be forced to buy more, force up the rate of production and bring the reduced price? Would this not become a waiting game, a sort of slow race, every buyer holding back as long as possible, placing a brake on normal demand?

Or, on the contrary, would consumers order heavily to put up the production rate and bring the price reduction sooner, in this way getting an average lower price on total tonnage bought?

It would seem that some radical changes in human nature would be necessary to apply such a plan, and a rigid type of "managed economy" with machinery for determining when the reduction of prices should go into effect. Not all steel mills attain the same high rate of operation at the same time and demand for various finished steel products does not rise and fall simultaneously.

There would seem to be many practical complications in putting into effect the suggestion of "Still Thinking."

FURTHER THINKING

Chicago

Must Think Our Way Out

To the Editor:

You are to be congratulated, I feel, on publishing Mr. Weaver's article on re-employment. (STEEL, Feb. 13, page 46.)

It is so refreshing to find a little constructive thinking on this subject that I am prompted to express my individual reaction, however insignificant it may seem.

There are two pertinent thoughts I would endorse, namely, that we must eventually think rather than wish our way out of this depression, and that politicians alone will not be able to do this for us.

P. W. LYON

Ass't Manager Sales,
Tin Plate division,
Wheeling Steel Corp.,
Wheeling, W. Va.

Everything

for Oxy-Acetylene Welding and Cutting

PROGRESS in the art of working metals requires a convenient and dependable source of acetylene, calcium carbide, oxygen, and welding and cutting apparatus and supplies. Whether you use the oxy-acetylene process for welding, cutting, flame-hardening, hard-facing, flame-softening, or steel conditioning, you can obtain promptly all the necessary products and service through The Linde Air Products Company.

Gases—Linde Oxygen is sold throughout the nation in gray-and-green cylinders. Each cylinder contains 110 cubic feet or 220 cubic feet of oxygen at a pressure of 2,000 pounds per square inch. All Linde Oxygen—whether for industrial or therapeutic use—is the same high and uniform quality.

Prest-O-Lite Dissolved Acetylene is produced from Union Carbide. For welding and cutting, it is sold in portable black steel cylinders having rated capacities of 100 cubic feet and 300 cubic feet of acetylene. For use with Prest-O-Lite appliances—heating torches, soldering irons and portable lights—Prest-O-Lite Dissolved Acetylene is sold in small steel tanks of 10- and 40-cubic feet capacity.

Calcium Carbide—Union Carbide is packed in 100-pound lots in blue-and-gray drums. Because of its uniform quality, high gas yield, accurate sizing, and careful packing, it has been recognized as a standard of excellence for over forty years. Union Carbide, an electric furnace product, is crushed and screened to all standard generator sizes.

Carbic Processed Carbide is high-grade calcium carbide, specially treated and compressed into cakes for use in Carbic acetylene generators and Carbic acetylene flood lights. The most frequently used size of Carbic cakes is No. 20. The orange drum contains 40 cakes weighing 100 pounds.

Union Carbide and Carbic Processed Carbide are readily available from warehouses, jobbers, and distributors throughout the country.

Apparatus—Oxweld, Prest-O-Weld, and Purox lines of welding and cutting blowpipes, regulators, manifolds, and outfits; Oxweld cutting machines; Oxweld and Carbic acetylene generators; and the complete Oxweld line of accessories, welding rod, and supplies—all are sold by Linde.

Service—The Linde service organization brings to users of the oxy-acetylene process practical field experience, based on comprehensive research and development facilities. This process service is available from field engineers—also through technical books, booklets, magazine articles, motion pictures, and in numerous other ways.

The words "Linde," "Union," "Prest-O-Lite," "Prest-O-Weld," "Purox," "Oxweld" and "Carbic" are trade-marks of Units of Union Carbide and Carbon Corporation.

The Linde Air Products Company

Unit of Union Carbide and Carbon Corporation

UCC

New York and Principal Cities · In Canada: Dominion Oxygen Company, Limited, Toronto

LINDE OXYGEN · PREST-O-LITE ACETYLENE · OXWELD APPARATUS AND SUPPLIES · UNION CARBIDE

You can see demonstrations of machine-cutting, including the Oxweld CM-15 Cutting Machine—flame-hardening—and the welding of oil well casings with the new Oxweld multi-flame tips—at the Linde exhibit, Area 109-115, Oil-World Exposition, Houston, Texas, April 24-29, 1939.